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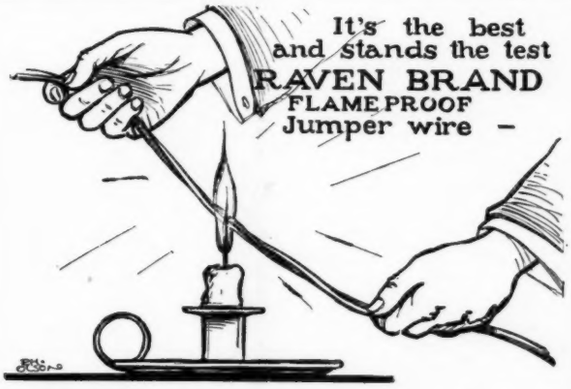

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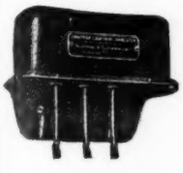

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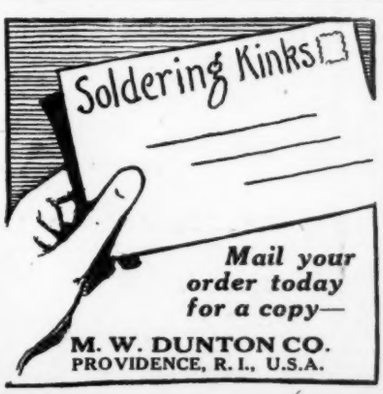

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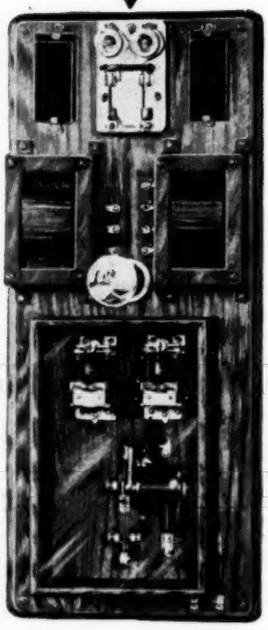

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FIRST PRINCIPLE OF MANAGEMENT.

Short-sighted, grasping policies do not pay. The first principle of management is comprehension of the relative importance of different departments. Commercial and industrial organizations must be run like a baseball game—there are times when sacrifice hits are required to win.—Herbert Kaufman.

Demand for Public Utility Bonds.

Financial men see a good prospect for increased demand for public utility bonds in the present investment situation. A year ago, they argue, it looked to many as though American securities were in a perilous position. Holders of American bonds and stocks living in Europe were planning to dump into the United States millions of securities to raise the money needed for existence in the war-stricken countries.

It was then feared that this wholesale unloading would demoralize the American market and depress prices materially. Now, however, although European investors have sold a billion of American securities, the record shows that we have absorbed them and still have a big cash surplus with which to buy more. The result has been that bonds have gone up in price instead of losing ground.

Besides, while a year ago railroad earnings, the steel output and bank deposits were at a low ebb, today all show an enormous increase. The comptroller of the currency reports that the banks have deposits of more than nine billions of dollars. This huge sum must seek investment.

The first rush was toward municipal bonds, and then toward railroad and industrial securities. Prices went up, for when prosperity hit the railroads and industrial concerns, the widespread publicity given their activity and growing net earnings' figures attracted many buyers. The prices on these securities have mounted so high that the conservative investor who desires a higher return on his money, must turn to other sources.

"It is here that the public utility securities come to the front. We have seen how the demand for municipal and railroad bonds has caused an actual shortage and higher prices," says a Chicago bond expert. "Is it not reasonable to expect that the next class to feel the effects of this demand will be the public utility?"

It may be pointed out that the supply of railroad bonds has been increased from abroad, whereas public utility bonds, secured by first mortgage on substantial properties, have not been sold to any extent outside of this country and, therefore, practically no increase in the available supply may be expected.

"When it is further remembered that public utility bonds are popular among investors who are desirous of obtaining a good security coupled with a steady appreciation in value toward maturity, the reason for the growing demand for this class of securities becomes plain. In fact, it is evident that the problem which bond houses will soon face is not to find a market for good public utility bonds, but to find sufficient high grade issues of this type to supply the demand."

A Telephone for Every Ten Persons.

The latest statistics having a bearing on the number of telephones in this country indicate that the number in use at the beginning of this year was in round numbers 10,750,000. The number of telephones in use in this country at the beginning of this year was therefore in round numbers 10,750,000.

The latest estimates of the population of the United States place it as something over 100,000,000. A comparison of the population and telephone figures indicates that there are at least ten telephones to every hundred persons. But the saturation point has not been anywhere near reached. On the basis of five persons to a family, it is readily seen that but one-half of the homes are supplied with this modern necessity—and this after nearly forty years. Surely the telephone field has some possibilities for development in the future.

Necessity Always Casts 15-in. Guns

By HERBERT KAUFMAN

You can't hold a position longer than your wit defends it. Krupp artillery, not a narrow strait, checked the Allies at the Dardanelles.

The day is near when Gibraltar will be as obsolete as the Great Wall of China—no barrier remains impregnable to invention.

Japan once relied upon isolation, for protection. Then, steam navigation squeezed all the water out of the map and jammed her borders against the shores of two hemispheres. She remains a sovereign kingdom by virtue of her modernization, not by favor of location.

You can't be sure of anything, nowadays, that isn't insured by progressive thinking.

The man in the job is constantly menaced by the man on the job. The higher he stands the greater his danger. The biggest target invites the most shots. Shoulder straps identify a general, not only to his own forces but also to the enemy's sharpshooters.

Leaders are exposed to everybody's ambitions. The man without position can work in obscurity and therefore to advantage. No one is watching him; while he, on the other hand, can, unsuspected, study the weaknesses of a cock-sure rival.

Those who have no other capital are forced to invest themselves.

Necessity always casts fifteen-inch guns.

The sense of security dulls every other sense.

When Holland had to dyke in against the sea, the spirit which roused her to mastery of oceans, turned her into a first-class power. When Holland was safe and settled down to the enjoyment of ease, she ceased to employ the very faculties that guaranteed it and is now a petty pawn to upstart kings.

No man is so strongly intrenched but what he can be displaced. Every Rothschild has his Rockefeller—every Hilton, his Wanamaker.

The best way to do it invariably comes out of the future. It takes one first-class "tomorrow" to thrash a historyful of "yesterdays."

Forget your advantages and attend to your weaknesses. Play the game of the man behind and devote your intelligence to anticipating developments.

Last year's safe wasn't built to defy next year's burglars' tools. Old viewpoints can't deal with new emergencies.

Even a king can only entail his throne. He may seat his son in power but can't arrange to maintain him in supremacy.

Nature and the past merely furnish ground-floor opportunities. Nothing is sure but survival by merit. Progress threatens every unfit individual and empire.

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Financial Report of Bell System and A. T. & T. Co.

Annual Report of Directors of American Telephone & Telegraph Co. Gives Statistical Information Regarding Operations of the Bell System as a Whole and the American Telephone & Telegraph Co.—Operating and Financial Data

The annual report of the directors of the American Telephone & Telegraph Co., for the year 1915, was made public this week. It is preceded by a general statement covering the business of the Bell system as a whole which is as follows:

At the end of the year the number of stations which constituted the Bell system in the United States was 9,151,221, an increase of 502,228, including 109,336 connecting stations. Of these, 2,995,321 were operated by local, co-operative and rural independent companies or associations having sublicense or connection contracts, so-called connecting companies.

The Bell system by its toll lines connects, with few exceptions, every village or rural community in the United States, and its exchange lines are within the reach of substantially all the residents of rural districts.

The service has been so improved that a majority of all stations can have dependable conversation with each other regardless of distance; and to all connected with the system the telegraph systems of the country are available.

The total mileage of wire in use for exchange and toll service was 18,505,545 miles, of which 1,029,951 were added during the year. Of the total mileage, over 16,050,000 miles were exchange wires, and over 2,450,000 toll wires. These figures do not include the mileage of wire operated by connecting companies. Of this total wire mileage, 93 per cent. is copper wire; 10,536,837 miles are underground, including 607,872 miles of toll wires in underground cables. The underground conduits represent a cost of $94,500,000 and the cables in the conduits, $111,200,000—a total in underground plant of $205,700,000.

There are 196,841 miles of phantom circuits in the Bell system, an increase during the year of 7,279 miles. Particular attention is called to the mileage of "phantom circuits," reported this year for the first time.

Including the traffic over the long distance lines, but not including connecting companies, the daily average of toll connections was about 819,000, and of exchange connections about 25,184,000, as against corresponding figures in 1914 of 799,000 and 27,049,000; the total daily average for 1915 reaching 26,003,000, or at the rate of about 8,652,400,000 per year.

While there was an apparent decrease in exchange traffic as compared with the previous year, on the same basis as last year there was the normal increase. All the decrease shown by the figures this year was due to a rigid exclusion of *all* uncompleted connections. As now established in our reports, exchange connections consist only of the local calls on which the subscriber received the desired connection. Calls are excluded which are "busy," "don't answer" or "abandoned;" which are to disconnected lines or lines in trouble; which are from a subscriber reporting that his bell rang, and which are to toll points or are incidental to calls to toll points.

Plant Additions.

The net amount added to plant and real estate by all the companies, excluding connecting companies, constituting our system in the United States during the year 1915 was $32,863,717, distributed as follows:

Real estate	$ 4,825,851	
Equipment	12,874,765	
Exchange lines	17,557,569	
Toll lines	3,010,764	
		$38,268,949
Less decrease in construction work in progress, etc.		5,405,232
Net additions		$32,863,717

Plant Additions of Previous Years.

The net amounts added in 16 years have been as follows:

1900	$31,619,100	1908	$26,637,200
1901	31,005,400	1909	28,700,100
1902	37,336,500	1910	53,582,800
1903	35,368,700	1911	55,660,700
1904	33,436,700	1912	75,626,900
1905	50,780,900	1913	54,871,900
1906	79,366,900	1914	50,045,300
1907	52,921,400	1915	32,863,700

This is a total for the 16 years, of $729,824,200.

During the year $76,060,000 was applied out of revenue to current maintenance and depreciation, an increase of $2,968,000 as compared with 1914. Current maintenance decreased $424,000, practically all of which was saved in the item of subscriber station removals. The number of stations disconnected was 30,000 less than in 1914.

The provision for depreciation of plant during the year was $44,888,700, an average of 5.2 per cent. of the cost of plant, and an increase over 1914 of $3,392,500. Of this $44,888,700, approximately $19,000,000, was unused during the year for replacement of wornout plant, and the reserves for future replacement have increased accordingly.

It is the continuing policy of the Bell system to provide out of earnings each year such amounts as represent the estimated wear and tear, obsolescence and inadequacy of plant accruing during that year, so that when any plant comes to be retired, sufficient reserve has been gradually acquired to meet the loss of capital due to such retirement.

Not only is this a sound and conservative policy for the protection of the investor in Bell securities, but it is the only way by which present telephone users pay for the wear of the plant they are using instead of passing it on to the next generation. Lack of recognition of this principle has caused many a failure in other industries as well as the telephone business, but the principle is now generally accepted and the practice is firmly established by the accounting rules of the Interstate Commerce Commission and the various state commissions.

Growth and Prospects.

In the latter part of the year the improvement in general business conditions throughout the country was reflected in the Bell telephone system by a substantial increase in the number of subscriber stations and by an improvement in toll earnings. In some sections the long distance toll business showed an abnormal increase and for a time taxed facilities to the utmost limits.

The gross telephone earnings for the entire year 1915 increased 6.4 per cent. over 1914, which is no more than the present normal growth from year to year. Comparing the two years by half-year periods, the first half of 1915 increased less than 5 per cent. over the first half of 1914, while the second half of 1915 increased nearly 8 per cent. over the same period of 1914.

The increase in subscriber stations by half years is even more notable:

	1914.	1915.
First half year	206,100	158,700
Second half year	125,900	225,300
Total	332,000	384,000

In the first half of 1915 the current additions to plant were $15,170,000 and in the last half they were $17,694,000. a total

of $32,864,000 for the year as compared with the estimate of $35,000,000 mentioned in last year's report. No new financing was necessary for these expenditures.

The Bell telephone system was able to respond quickly and efficiently to the demands made on it because of the policy

	1914.	1915.	Increase.
Gross revenue	$225,952,123	$239,909,649	$13,957,526
Expenses:			
Operation	$ 81,396,219	$ 84,550,665	$ 3,154,446
Current maintenance	31,595,388	31,171,272	424,116*
Depreciation	41,496,240	44,888,702	3,392,462
Taxes	12,216,997	13,117,253	900,256
Total expenses	$166,704,844	$173,727,892	$ 7,023,048
Net revenue	$ 59,247,279	$ 66,181,757	$ 6,934,478
Deduct interest	18,940,641	18,095,643	844,998*
Balance net income	$ 40,306,638	$ 48,086,114	$ 7,779,476
Deduct dividends paid	30,304,186	32,897,065	2,592,879
Balance for surplus	$ 10,002,452	$ 15,189,049	$ 5,186,597

Revenue and Expenses of Bell System, 1914 and 1915.

consistently followed for years of providing plant *in advance* of the requirements. We do not know to what extent the present revival of industry will go or how long it will last. But we do know that a responsibility rests on us to be ready for further expansion when it comes. During 1916 we are carrying on the work of new construction on about the same scale as experience had shown was advisable before the outbreak of the European war.

It is estimated that the current additions to plant during the year will aggregate about $57,000,000 and construction work is now proceeding on that basis. The financing for this and to meet all indebtedness maturing during the year was completed and announced in January and is stated elsewhere in this report.

Operating Results.

The following tables show the business for the year of the Bell telephone system including the American Telephone & Telegraph Co. and its associated holding and operating com-

Assets:	Dec. 31, 1914.	Dec. 31, 1915.	Increase.
Telephone plant	$ 847,204,803	$ 880,068,520	$32,863,717
Supplies, tools, etc.	15,701,601	15,951,582	249,981
Receivables	37,275,586	43,518,625	6,243,039
Cash	49,791,276	45,716,330	4,074,946*
Stocks and bonds	69,800,814	72,652,646	2,851,832
Total	$1,019,774,080	$1,057,907,703	$38,133,623
Liabilities:			
Capital stock	$ 393,731,750	$ 440,711,200	$46,979,450
Funded debts	385,352,367	353,236,464	32,115,903*
Bills payable	15,630,790	2,404,920	13,225,870*
Accounts payable	26,214,274	29,039,127	2,824,853
Total outstanding obligations	$ 820,929,181	$ 825,391,711	$ 4,462,530
Employes' benefit fund	8,889,750	9,114,329	224,579
Surplus and reserves	189,955,149	223,401,663	33,446,514
Total	$1,019,774,080	$1,057,907,703	$38,133,623

*Decrease.

Combined Balance Sheets, 1914 and 1915, Bell System.

panies in the United States, but not including connecting independent or sub-licensee companies, or the Western Electric Co., except as investments in and dividends from those companies are included respectively in assets and revenue. All inter-company duplications are eliminated in making up these tables so that the figures represent the business of the system as a whole in its relations to the public.

The gross revenue in 1915 of the Bell system—not including the connected independent companies—was $239,900,000; an increase of over $13,900,000 over last year. Of this, operation consumed $84,500,000; taxes, $13,100,000 or 1.64 per cent. on the outstanding capital obligations; current maintenance, $31,200,000; and provision for depreciation, $44,900,000.

The surplus available for charges, etc., was $66,200,000, of which $18,100,000 was paid in interest and $32,900,000 was paid in dividends.

The total capitalization, including inter-company items and duplications but excluding reacquired securities of the companies of the Bell system, is $1,367,537,840. Of this, $571,185,256 is owned and in the treasury of the companies of the Bell system.

The capital stock, bonds and notes payable outstanding in the hands of the public at the close of the year were $796,352,584.

If to this be added the current accounts payable, $29,039,127, the total outstanding obligations of every kind were $825,391,711, as against which there were liquid assets, cash and current accounts receivable, of $89,234,955, leaving $736,156,756 as the net permanent capital obligations of the whole system outstanding in the hands of the public.

	1907	1915	Increase
Gross revenue	$128,579,800	$239,909,649	$111,329,849
Expenses:			
Operation	45,894,900	84,550,665	38,655,765
Current maintenance	36,626,700	{31,171,272}	39,433,274
Depreciation		{44,888,702}	
Taxes	4,873,400	13,117,253	8,243,853
Total expenses	$ 87,395,000	$173,727,892	$ 86,332,892
Net revenue	$ 41,184,800	$ 66,181,757	$ 24,996,957
Deduct interest	10,508,500	18,095,643	7,587,143
Balance net income	$ 30,676,300	$ 48,086,114	$ 17,409,814
Deduct dividends paid	18,151,700	32,897,065	14,745,365
Balance for surplus	$ 12,524,600	$ 15,189,049	$ 2,664,449

Revenues and Expenses of Bell System, 1907 and 1915.

As stated in previous reports, we believe from appraisals made by our engineers that the cost of reproduction of the physical plants of the Bell system would exceed their book cost by some $61,000,000, aside from all intangible values.

These telephone plants stand on the books of the companies at $880,068,520 as of December 31, 1915, an increase during the year of $32,863,717. Stocks and bonds owned increased $2,851,832. Supplies, tools and receivables increased $6,493,020, and cash balances were decreased $4,074,946. This makes a total increase in assets of $38,133,623, which is represented by

	Dec. 31, 1907	Dec. 31, 1915	Increase
Assets:			
Contracts and licenses	$ 9,078,000		$ 9,078,000*
Telephone plant	502,987,900	$ 880,068,520	377,080,620
Supplies, tools, etc.	17,165,200	15,951,582	1,213,618*
Receivables	29,584,500	43,518,625	13,934,125
Cash	24,869,600	45,716,330	20,846,730
Stocks and bonds	29,448,300	72,652,646	43,204,346
Total	$613,133,500	$1,057,907,703	$444,774,203
Liabilities:			
Capital stock	$291,095,400	$ 440,711,200	$149,615,800
Funded debts	196,113,700	353,236,464	157,122,764
Bills payable	45,175,700	2,404,920	42,770,780
Accounts payable	19,436,600	29,039,127	9,602,527
Total outstanding obligations	$551,821,400	$ 825,391,711	$273,570,311
Employes' benefit fund		9,114,329	9,114,329
Surplus and reserves	61,312,100	223,401,663	162,089,563
Total	$613,133,500	$1,057,907,703	$444,774,203

*Decrease.

Combined Balance Sheets, 1907 and 1915, Bell System.

$4,462,530 increase in outstanding obligations of the whole system and an increase in surplus and reserves of $33,671,093.

In accordance with our previous practice in making up the combined figures for the Bell system, all inter-company items have been eliminated, and all intangible assets have been ex-

cluded, so that the combined surplus and reserves as shown in the accompanying table, are considerably less than the sum of surplus and reserves shown on the books of the separate companies.

All of the present surplus and reserves, aggregating $223,400,000, is invested in tangible and productive property the revenue from which enables the companies to maintain their efficiency without paying capital charges on this amount.

Your attention is called to a comparative statement of the Bell system for the years 1907 and 1915. During that period the gross earnings have increased $111,300,000, of which $86,300,000 has been absorbed by increase in expenses, leaving an increase of $25,000,000 in net earnings. The increase in interest was $7,600,000 and in dividends $14,700,000. The surplus for 1915 was over $15,000,000.

During this eight-year period the assets of the companies have increased nearly $445,000,000, while the capital obligations and payables outstanding have increased $273,600,000. The surplus and reserves have increased from $61,300,000 to $223,400,000, over $162,000,000 after setting aside $9,114,329 for the employes' benefit fund.

Average Operating Units of Associated Companies.

The accompanying table shows average operating revenue and expenses per station, operating ratios, unit plant costs, etc., of the associated operating companies (not including the American Telephone & Telegraph Co.'s long distance lines), for the years 1895, 1900, 1910, 1914 and 1915. Although there are objections to the use of the subscriber's station as a unit or standard, especially in comparisons of one part of the country with another, yet it is the best unit available and for general comparisons of the whole system from one year to another it gives some idea of the trend of the business.

It will be observed that both earnings and expenses per station now vary slightly from year to year but are very much less than in earlier years. The expenses per station have in spite of improved wages and increased taxes been kept down by improved methods and greater efficiency all along the line.

The decrease—from $69.75 in 1895 to $29.80 in 1915—in the average rate or earnings per station made possible by the improvements in apparatus and methods, is largely the result of "measured service," which places the use of the system within the reach of the many who can afford to pay, and would be warranted in paying, for actual use or value of the service to them, but can not afford to contribute toward the service of others and would not be warranted in so doing.

Flat rates, that is, a uniform rate for each class of service regardless of use, are based on the average cost or the average use of all. In places where the use varies greatly with widely separated extremes, flat rates are objectionable in that the larger user, to whom the service is a business necessity and directly a profit, gets the service at less than cost, while the small user, to whom the service is at most a convenience and very often a luxury, pays the deficit.

In such places the average use is also largely augmented by the large use of the service by a relatively small number; consequently any uniform rate presents both objectionable and inequitable discrimination as between the large users and small users. In rural or community service, or in residential service generally, where there is small variation in use, and the service conditions are less onerous, exacting, or costly, whatever variations there are in service can be covered by single or party line service.

Through these adjustments in rates, the use of the system has been placed within the reach of all who have any use for the service. A very large majority of all the users of the telephone get their service at a price much less than the average revenue as shown above, which makes it the cheapest telephone service in the world.

Particular attention is called to the per cent. of net earnings and of dividend and interest disbursements to total plant and other assets:

Net earnings to plant and other assets.....5.84 per cent.
Dividends and interest to plant and other assets..4.76 per cent.

In this statement the book valuation is used, which is considerably less than replacement value and far below any appraisement which the company would be obliged to accept, either as a basis for fixing rates or for any other purpose, and is well within all official valuations so far as such have been made.

The low percentage of earnings on the value of the plant, and of average distribution to capital represented by securities issued against this plant, should convince the most skeptical that under no possible different conditions could the public get cheaper service. Whether they could get better service must be left to the decision of those who have had the opportunity of comparing the service of the Bell system with that of other systems either of this country or of the world.

(This Table Covers the Companies Owning All the Exchanges and Toll Lines of the Bell Telephone System Except the Long Distance Lines of American Telephone & Telegraph Co.)

Average per Exchange Station.	1895	1900	1910	1914	1915
Earnings:					
Exchange service	$69.75	$44.68	$31.28	$29.81	$29.80
Toll service	11.35	12.60	9.47	8.60	8.65
Total	$81.10	$57.28	$40.75	$38.41	$38.45
Expenses:					
Operation	$29.15	$21.63	$15.14	$15.88	$15.61
Taxes	2.23	2.37	2.00	2.00	2.02
Total	$31.38	$24.00	$17.14	$17.88	$17.63
Balance	$49.72	$33.28	$23.61	$20.53	$20.82
Maintenance and depreciation	$26.20	$17.68	$13.46	$12.62	$12.38
Net earnings	$23.52	$15.60	$10.15	$ 7.91	$ 8.44
Per cent. operation expense to telephone earnings	35.9	37.8	37.2	41.4	40.6
Per cent. telephone expense to telephone earnings	71.0	72.8	75.1	79.4	78.1
Per cent. maintenance and depreciation to average plant, supplies, etc.	9.1	8.4	9.5	8.9	8.8
Per cent. increase exchange stations*	15.7	26.5	11.8	6.4	6.9
Per cent. increase miles exchange wire*	15.9	33.2	12.0	9.2	6.8
Per cent. increase miles toll wire* (excluding long distance lines)	21.3	25.2	11.5	5.5	.9†
Average plant cost per exchange station (exchange and toll construction, excluding long distance lines)	$260	$199	$142	$141	$138
Average cost per mile of toll wire (including poles and conduits, excluding long distance lines)	$81	$71	$66	$69	$70
Per cent. gross telephone earnings to average plant	29.7	28.4	28.8	27.6	27.7
Per cent. total net earnings to average capital obligations	9.76	8.85	7.52	6.66	7.20
Per cent. total net earnings to plant and other assets	9.36	7.96	6.65	6.51	5.84
Per cent. paid out on average capital obligations	5.13	6.10	6.01	5.88	5.88
Per cent. paid out on plant and other assets	5.09	5.57	5.31	4.87	4.76

*Increase during year shown, over previous year.
†Small increase mainly due to increase in radius covered by exchange rates.

Average Operating Units of Associated Companies, 1895 to 1915.

Western Electric Co.

The relations between the Western Electric Co. and this and the associated companies have been very fully discussed and set forth in previous reports, particularly that for the year 1914. The functions which it performs for the Bell system continue unchanged.

The manufacturing and business of the Western Electric were operated under an Illinois corporation. Its nominal headquarters and principal factory were in or near Chicago. The actual official headquarters and principal laboratory, ware-

house and experimental departments were in New York City. To straighten out the anomalous position of the company, and to bring its operation within the actual conditions, the property was transferred, with the consent of every shareholder, to the Western Electric Co., Inc., organized under the laws of New York.

The principal factory will remain in Illinois, and the legal as well as the actual headquarters will be in New York.

The company's business for 1915 has been on the whole better than was expected. The sales amounted to $63,852,000, of which $38,394,000 represents sales to the companies of the Bell system, and $25,458,000 represents sales to other customers.

No prediction can be made with any degree of confidence at the present time as to the effect of the war upon the company's foreign investments.

	Dec. 31, 1895	Dec. 31, 1900	Dec. 31, 1905	Dec. 31, 1910	Dec. 31, 1914	Dec. 31, 1915	Increase
Total miles of pole lines	78,203	131,538	213,233	282,877	326,168	330,602	4,434
Miles of underground conduit length of single duct)	.....	.....	.....	30,165	42,761	44,510	1,749
Miles of underground wire	184,515	705,269	2,345,742	5,992,303	9,760,165	10,536,837	776,672
Miles of submarine wire	2,028	4,203	9,373	24,636	35,809	36,314	505
Miles of aerial wire	488,872	1,252,329	3,424,803	5,625,273	7,679,620	7,932,394	252,774
Total miles of wire	675,415	1,961,801	5,779,918	11,642,212	17,475,594	18,505,545	1,029,951
Comprising toll wire	215,687	607,599	1,265,236	1,963,994	2,437,697	2,453,483	15,786
Comprising exchange wire	459,728	1,354,202	4,514,682	9,678,218	15,037,897	16,052,062	1,014,165
Total	675,415	1,961,801	5,779,918	11,642,212	17,475,594	18,505,545	1,029,951
Miles of phantom circuit	.....	.....	.....	115,506	189,562	196,841	7,279
Total exchange circuits	237,837	508,262	1,135,449	2,082,960	2,972,901	3,174,271	201,370
Number of central offices	1,613	2,775	4,532	4,933	5,289	5,300	11
Number of Bell stations	281,695	800,880	2,241,367	4,030,668	5,763,008	6,155,900	392,892
Number of Bell connected stations*	27,807	55,031	287,348	1,852,051	2,885,985	2,995,321	109,336
Total stations	309,502	855,911	2,528,715	5,882,719	8,648,993	9,151,221	502,228
Number of employes	14,517	37,067	89,661	120,311	142,527	156,294	13,767
Number of connecting companies, lines and systems	.....	.....	.....	17,845	27,210	28,306	1,096
Exchange connections daily	2,351,420	5,668,986	13,543,468	21,681,471	27,049,225	25,183,799	†1,865,426
Toll connections daily	51,123	148,528	368,083	602,539	798,949	819,030	20,081

*Includes private line stations.
†Decrease—see explanation under discussion of traffic.

Condensed Statistics of the Bell Telephone System in the United States.

Employes' Benefit Funds.

The plan for employes' pensions, disability benefits and death benefits announced in the report for 1912 has been in complete and successful operation throughout the Bell system for three years. Under this plan the companies bear all the cost of pensions on account of old age, of benefit payments in sickness, of compensation in cases of accident, and of benefits to dependents in cases of death. Every employe can calculate for himself beforehand exactly what he is entitled to under any of these contingencies.

Compensation in cases of industrial accidents is now covered, more or less completely, by the laws of most states. The statutes of the various states naturally differ as to the rates and periods of such compensation and in other details. Our plan is uniform for all parts of the country and is usually somewhat more liberal than the statutory provisions, so that while in no case does the injured employe receive less than fixed by law, in many cases he receives slightly more.

The other benefits under our plant are not required by law, but we believe it is not more than simple justice that the men and women who devote their working lives to the telephone service, should be assured of some income when they are sick or come to old age, and that some immediate provision should be made for those dependent on such workers when they die in the service. If justice demands this, its cost is a fair charge against the business, and we so regard it.

Besides the matter of justice, a suitable provision for these exigencies of life which the wage-earner is frequently unable to meet single-handed relieves him of anxiety and dread and enables him when sick to secure the care and treatment which he needs. The payment of the benefits thus brings a very real return through the employe's increased efficiency and interest in the service. Evidences of this and of its beneficial effect on the telephone service appear continually. The telephone-using public is benefited as well as the telephone employes.

In the three years 1913-1915, inclusive, the expenditures from the benefit funds of the Bell companies have aggregated $3,779,896. At December 31, 1915, the reserves for these benefit funds aggregated $9,114,329. Some figures for the year 1915 will be of interest:

Pensions. At the end of the year 257 former employes were on the pension roll, 54 having been added and 10 discontinued during the year. The average pension paid was $44 per month.

Sickness. Fifteen thousand three hundred and twenty-five cases of sickness, for which benefits were paid under the plan, occurred during the year. The average period of disability for completed cases was 38 days and the aggregate benefits paid were $723,759.

Accident. There were 7,705 accident cases during the year, of which comparatively few were serious. In one-third of the cases the employe went back to work within a day. In over two-thirds of the cases the period of disability was not over a week. Of the total number of accidental injury cases,

	Dec. 31, 1885	Dec. 31, 1890	Dec. 31, 1895	Dec. 31, 1900	Dec. 31, 1905	Dec. 31, 1910	Dec. 31, 1915
ASSETS:							
Contracts and licenses	$16,732,100	$18,925,700	$ 20,005,300	$ 14,794,300	$ 13,313,400	$ 2,943,381	$.....
Telephone plant	38,618,600	58,512,400	87,858,500	180,699,800	368,065,300	610,999,964	880,068,520
Supplies, tools, etc	348,500	1,021,800	1,810,000	6,464,400	11,069,500	20,987,551	15,951,582
Receivables	1,450,900	1,761,600	3,746,600	13,644,000	26,220,800	26,077,802	43,518,625
Cash	1,792,600	1,183,300	2,484,100	3,223,000	11,005,900	27,548,933	45,716,330
Stocks and bonds	1,138,800	2,697,400	4,480,500	11,400,400	23,041,200	64,766,089	72,652,646
Total	$60,081,500	$84,102,200	$120,385,000	$230,225,900	$452,716,100	$753,323,720	$1,057,907,703
LIABILITIES:							
Capital stock	$38,229,200	$43,792,800	$ 57,462,700	$130,006,900	$238,531,100	$344,645,430	$ 440,711,200
Funded debts	367,400	6,473,100	10,074,100	44,137,900	93,079,500	224,791,696	353,236,464
Bills payable	.....	1,323,000	2,000,000	7,000,000	35,000,000	42,566,943	2,404,920
Accounts payable	2,618,900	3,301,100	6,138,000	13,583,300	22,407,500	21,721,125	29,039,127
Total outstanding obligations	$41,215,500	$54,890,000	$ 75,674,800	$194,728,100	$389,018,100	$633,725,194	$ 825,391,711
Employes' benefit fund	.....	.....	.....	.....	.....	.....	9,114,329
Surplus and reserves	18,866,000	29,212,200	44,710,200	35,497,800	63,698,000	119,598,526	223,401,663
Total	$60,081,500	$84,102,200	$120,385,000	$230,225,900	$452,716,100	$753,323,720	$1,057,907,703

Combined Balance Sheets at Five-Year Intervals, 1885-1915, of Bell Telephone System, All Duplications Between Companies Excluded.

36 resulted fatally. These fatal cases were as heretofore chiefly from contact with the high tension currents of power and lighting companies. They were less in number than in previous years, partly perhaps because of less construction work in 1915, but more especially, we think, because of the progress made in eliminating unsafe conditions of plant and the greater care urged on all plant employes with respect to the prevention of accidents.

The total payments from the benefit funds on account of accidental injuries were $429,283 during the year, including $108,699 for medical attendance, hospital care and other expenses incurred in aid of those injured.

Death Benefits. The number of employes of five years or more service, who died during the year (not including the accident cases mentioned above) was 166. Of these 138 left dependents to whom were paid $111,384. Burial expenses for those leaving no dependents were $4,248, a total of $115,632.

	Year 1885	Year 1890	Year 1895	Year 1900	Year 1905	Year 1910	Year 1915
Gross revenue	$10,033,600	$16,212,100	$24,197,200	$46,385,600	$97,500,100	$165,612,881	$239,909,649
Expenses	5,124,300	9,067,600	15,488,400	30,632,400	66,189,400	114,618,473	173,727,892
Net revenue	$ 4,909,300	$ 7,144,500	$ 8,708,800	$15,753,200	$31,310,700	$ 50,994,408	$ 66,181,757
Interest	27,700	278,700	655,500	2,389,600	5,836,300	11,556,864	18,095,643
Net income	$ 4,881,600	$ 6,865,800	$ 8,053,300	$13,363,600	$25,474,400	$ 39,437,544	$ 48,086,114
Dividends	3,107,200	4,101,300	5,066,900	7,893,500	15,817,500	25,160,786	32,897,065
Balance for surplus	$ 1,774,400	$ 2,764,500	$ 2,986,400	$ 5,470,100	$ 9,656,900	$ 14,276,758	$ 15,189,040

Comparative Revenue at Five-Year Intervals, 1885-1915, Bell Telephone System.

Summary. The total amount of all benefits paid from these funds during the year was $1,397,742. This does not include the expenses of administration of the funds nor the general medical supervision and assistance given by some of the companies.

Financial assistance is also given in many cases of illness which do not come wholly within the limitations imposed on the employes' benefit funds. These are chiefly the cases of employes who have been in the service less than two years, or whose illness continues for long periods, or who in other ways are not cared for by the regular system. Plans for systematizing and extending the assistance given in such cases and for giving such medical assistance as will tend to decrease or prevent illness are under consideration at this time.

ASSETS.		
Stocks of associated companies	$439,376,366	
Bonds and notes of associated companies	59,257,084	$498,633,450
Telephones	$ 15,299,000	
Real estate	508,400	
Long distance telephone plant	50,113,061	65,920,462
Trustees—Employes' stock purchase plan		8,795,968
Miscellaneous investments	$ 2,705,000	
Special demand notes	6,575,000	
Current accounts receivable	10,463,558	19,743,558
Cash and deposits		29,870,555
		$622,963,993
LIABILITIES.		
Capital stock		$380,477,100
4 per cent. collateral trust bonds, 1929	$78,000,000	
4 per cent. convertible bonds, 1936	4,129,000	
4½ per cent. convertible bonds, 1933	28,063,700	
5 per cent. Western T. & T. Co. bonds, 1932	9,990,000	
Notes to associated companies	4,172,350	124,355,050
Dividends payable Jan. 15, 1916	$ 7,609,542	
Interest and taxes accrued, but not due	2,672,975	
Current accounts payable	2,572,079	12,854,596
Employes' benefit fund		2,015,328
Reserves for depreciation and contingencies		27,130,971
Surplus (including premiums on capital stock)		76,130,948
		$622,963,993

Note: $33,962,236 5 per cent. coupon notes of associated companies endorsed but not owned by this company are not included above in either assets or liabilities.

A. T. & T. Co. Balance Sheet, December 31, 1915.

The net earnings of the American Telephone & Telegraph Co. for the year were $41,117,487.28, which is $559,509.99 more than in the previous year. The interest charges were $6,498,849.72 and the dividends at the regular rate of 8 per cent. per annum were $29,100,591.03. Of the resulting balance there was carried to reserves $2,500,000, and to surplus $3,018,046.53.

It will be noticed by comparison with the previous year's balance sheet that the indebtedness of the company was reduced during the year by $50,963,560. Of this decrease, $39,312,300 was due to the conversion of bonds into stock, as explained below, and the balance $11,651,260 was a reduction in the company's payables of all kinds.

For the $39,312,300 convertible bonds surrendered and for cash payments in connection therewith, stock having a par value of $35,795,200 was issued, a reduction in capital obligations of $3,517,100. The company's direct obligations of every description were thus reduced by a total of $15,168,360.

On the other side, under assets, there is an increase in investments in associated companies of $10,604,042, and in telephones and long distance telephone plant of $953,074, while cash on hand decreased $6,396,202 and miscellaneous receivables decreased $19,609,882.

The new item "Trustees—Employes' Stock Purchase Plan" $8,795,967, represents the balance not yet due from employes who are purchasing stock and paying for it by installments of $2 per share per month under the plan announced in last year's report. This balance is being reduced by about $250,000 per month.

The net decrease in assets was thus $5,653,000 as compared with the decrease in obligations of $15,168,360, showing a net improvement in the company's financial position of $9,515,360, which is represented by the increase in surplus and reserves.

Capital Stock and Bonds.

The 4½ per cent. convertible bonds issued March 1, 1913, are under their terms convertible into stock beginning March 2, 1915, at the ratio of $120 in bonds (or $100 in bonds and $20 in cash) for one share of stock. Of the $67,000,000 issued $38,936,300 have been converted, leaving outstanding $28,063,700.

Of the 4 per cent. convertible bonds, $376,000 have been converted during the year, leaving outstanding $4,129,000.

Of the $10,000,000 Western Telephone & Telegraph Co. bonds assumed by this company, $10,000 have been reacquired during the year.

The only capital stock issued during the year was $35,795,200 par value, issued in exchange for convertible bonds.

The total outstanding capital stock and bonds of the American Telephone & Telegraph Co. at December 31, 1915, were as follows:

Capital stock	$380,477,100
4 per cent. collateral trust bonds, 1929	78,000,000
4 per cent. convertible bonds, 1936	4,129,000
4½ per cent. convertible bonds, 1933	28,063,700
5 per cent. Western Telephone & Telegraph Co. bonds, 1932	9,990,000
Total	$500,659,800

For the $380,477,100 capital stock, $412,190,802 has been paid into the treasury of the company, the $31,713,702 in excess of par value representing premiums on stock which are carried as part of the company's surplus. The amount added to surplus during 1915 on this account due to the conversion of bonds having a par value greater than the stock issued in ex-

change therefor, was $7,176,244. All discounts on the bond issues have been charged off.

The number of shareholders, not including "employe" shareholders, 65,512, on December 31, 1915, shows an increase of 6,097 during the year. That the distribution is general appears from the following: 57,580 held less than 100 shares each;

	1914.	1915.
Earnings:		
Dividends	$25,638,205	$25,662,616
Interest and other revenue from associated companies	13,959,944	13,407,977
Telephone traffic (net)	5,530,454	6,544,462
Other sources	1,067,995	1,194,299
Total	$46,196,598	$46,809,354
Expenses	5,638,621	5,691,867
Net Earnings	$40,557,977	$41,117,487
Deduct interest	8,223,163	6,498,849
Balance	$32,334,814	$34,618,637
Deduct dividends	27,572,674	29,100,591
Balance	$4,762,139	$5,518,046
Carried to reserves	$2,500,000	$2,500,000
Carried to surplus	2,262,139	3,018,046
Total	$4,762,139	$5,518,046

A. T. & T. Co. Comparative Statement of Earnings and Expenses.

7,563 held from 100 to 1,000 shares each; 368 held from 1,000 to 5,000 shares each; 13 held 5,000 shares or more each (omitting brokers and holders in investment trusts, etc.).

Of the holders of less than 100 shares each, 13,890 held 5 shares or less each; 43,362 held 25 shares or less each.

The average number of shares held was 58, or, deducting the stock held by trustees under the employes' stock purchase plan, the average was 56 shares. A majority of the company's shareholders are women. About 6 per cent. of the stock was, at December 31, in the names of brokers, and less than 3 per cent. of the stock is held in Europe.

To the 65,512 stockholders of record shown above there should be added some 32,000 employes of the Bell system in all parts of the country who are paying for stock out of their wages at the rate of $2 per share per month. Counting these and also those persons whose stock is held for them in investment trusts and the like, there are more than 100,000 actual owners of stock in this company.

In response to many requests, the plan to aid employes to purchase stock on easy terms of payment has been extended as of March 1, 1916, to those not buying stock under the original plan.

Financing for 1916.

As nearly as can be determined from the experience of several years past the normal or average amount of new money required for the development of the Bell system is about $25,000,000 per annum.

For the year 1916 provision has been made to meet these normal or average requirements of about $25,000,000, and also to pay off the 5 per cent. coupon notes of associated companies which mature in April and May of this year by the sale in January of $50,000,000 4½ per cent. coupon notes maturing February 1, 1918. Part of these notes are issued by associated companies and endorsed by the American Telephone & Telegraph Co. and the balance are direct obligations of this company.

Telephone Growth in Cuba.

"Telephone companies' securities have long since taken their proper place among the best securities in the financial markets throughout the United States, Europe, and more recently in Cuba," according to a report made by the president of the Cuban Telephone Co. "The telephone business is now 35 years old, and never in its history has there been any depreciation or reduction in the volume of business done. It would be impossible to measure in money value the great growth of trade that has already been brought about by this service."

This is particularly true of the telephone service in Cuba. The history of the telephone there, according to an article in "Twentieth Century Impressions of Cuba," dates back to 1888. In May, of that year, the government of Spain issued an elaborate scheme for telephonic development in Cuba, Porto Rico and the Philippines. The system was to be constructed with the most improved appliances known, and later if other appliances which in the judgment of the government would be beneficial were discovered, the holder of the concession was to be required to put them into commission within six months, or should he fail, the government was authorized to establish a new service making use of the new appliances. The kinds of telephone lines and cables were to be specified in the sale, the secrets of the government were to be kept inviolable; service to the government by the company was to be gratuitous up to 5 per cent. of the apparatus employed on the line; fines were to be imposed and penalties collected for failure to comply with any of the conditions of the concession.

Under these terms an auction sale of the telephone concession for Havana was held and obtained by a company organized under Spanish law, the Red Telefonica Co., of Havana, with a capital of $270,000 Spanish gold. In a desultory way the company developed the Havana system up to 1,200 Blake telephones, inefficiently operated and inadequate to the needs of the community. The earnings instead of being applied to the maintenance of the plant were distributed in dividends.

This was in 1899, when Cuba was under the military occupation of the United States. The inadequacy of the plant came to the attention of American capitalists who believed when developed according to modern methods it would be a profitable field for American capital and purchased the stock. An American company was organized in December, 1900. United States experts reported the system so bad that it was necessary to rebuild the entire plant, and the work of modernizing began.

However, although the necessity for telephone legislation was evident, a bill was vetoed by the president of the Cuban Republic, and telephone development was at a standstill until the second intervention of the United States in 1906-1907, when the provisional government took it up, getting no further, however, than the drafting of a project. So it was not until the Gomez administration that the necessary legislation was procured. Since then the extension of the local and long distance telephone has proved one of the most powerful factors in the rapid development of Cuba.

Some idea of the growth of the long distance business may be gathered from the fact that in 1911 the revenue from this source increased from $500 in October to $3,500 in March. One of the factors responsible for this increase, it is said, was the installation of the automatic telephone when the human operator was no longer an indispensable necessity.

Rochester (N. Y.) Telephone Men Receive Increase.

The Rochester (N. Y.) Telephone Co. recently announced a 25 per cent. increase in wages and reduced working hours for about a hundred men employed in the construction, maintenance and installation departments. The new schedule became effective March 1.

Under the new schedule, the men will report at 8 o'clock in the morning and quit at 5 o'clock in the evening and unless directed they will not report back to the exchange building. The old schedule required them to work from 7:30 o'clock in the morning to 5:30 o'clock in the evening and report back regardless of the district in which they were working.

The men will be given six holidays with pay and Saturday afternoons off from May 1 to November 1. Time and a half pay will be given for work on holidays, Sundays and overtime.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

334. For what means is the intermediate frame used? What is used to distribute the multiple jacks among the answering jacks?

335. Why is the intermediate frame not installed in small exchanges? What is necessary in the design of any kind of distributing frame?

336. What determines the character of the jumper wire employed on the intermediate frame?

337. Why is the intermediate frame an important item of equipment in the proper distribution of the exchange traffic load among the operators?

338. How is it possible to change lines from one operator to the answering jacks on another position?

339. Upon what does the operation of all common battery systems for local service depend? Outline the arrangement by which a line circuit is connected to another circuit.

CHAPTER XVI. The Typical Line Circuit (Continued).

340. *The non-multiple, common battery, line circuit.*—The arrangements outlined have, aside from certain minor differences in mechanical arrangement, a place in every telephone line circuit. This is true whether the line circuit under consideration be common battery or magneto. In fact, it may be truthfully said that the entire arrangement and makeup of the line equipment is determined by the character of the line signal, coupled with conditions dependent upon whether the line is multipled or not. In other words, it is necessary to provide different arrangements of line equipment for different kinds of line signals and it is necessary to provide for the busy test and for disconnecting the signaling part of the equipment when a connection is made with the line in a multiple.

In Fig. 134 is shown the usual arrangement of a non-multiple common battery line circuit. This should be compared with

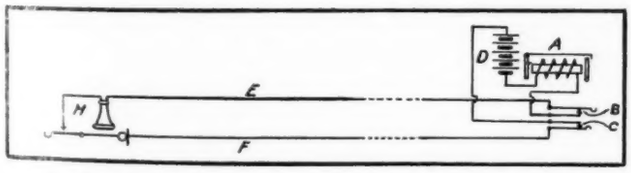


Fig. 134. **Use of Jack to Cut Off Signaling Coil from Line.**

the outline of the line circuit shown in Fig. 133. The relay or electromagnetic signal, *A*, is connected to one of the jack line springs by the contact, *B*, while it is connected with the other through the common battery, *D*, and the jack spring contact, *C*.

341. *Operation of non-multiple, common battery, line circuit.*—It is perfectly clear that when the circuit between the two line wires, *E* and *F*, is closed, a current will be permitted to pass through the winding of the relay or electromagnetic signal, *A*, and the loop formed by the line itself and the connection between the two wires at the telephone *H*. Ordinarily the connection between the two line wires will be formed by the path through a telephone instrument at *H*. In special cases this connection between the line wires may be made otherwise as would occur on a private branch exchange trunk.

Since the current flows in the winding of the relay or electromagnetic signal, *A*, its armature will be attracted and will either directly signal the operator by raising a target, or by closing the circuit of battery through a miniature switchboard lamp for the same purpose (see Section 242, TELEPHONY'S Home Study Course, November 27, 1915). When the plug is inserted in answering a call, it will mechanically spread the jack springs and *break* the circuit of the battery and signal at the contacts, *B* and *C*.

The relay or signal winding will, in this way, be disconnected from the line circuit whenever the plug is in the line jack, thereby complying with the fourth essential of the line equipment as outlined in Section 329, TELEPHONY of February 26.

The action of the mechanically-operated jack springs is very positive and reliable in every way. It is perfectly satisfactory provided that connections may be made only with the line at *one jack*.

342. *The problem of the multiple board.*—Should the switchboard be larger so that it becomes necessary to afford more than one operator access to the line jack, it is evident that some additional expedient is necessary in order to free the line of the coil of the signaling relay or signal. While this is a condition present in any common battery multiple switchboard, it is also present in all magneto switchboards having the lines multipled and the same methods of relief may be applied to the two types of equipment. Two methods, speaking generally, have been used for this purpose; one is entirely mechanical, and the other electrical in principle of operation.

343. *The series multiple line circuit.*—In Fig. 135 is shown diagrammatically the series multiple. In this arrangement, the line is carried from section to section and is looped through each multiple jack. Whenever any operator inserts her plug in one of the line jacks, the signaling equipment, whether it be magneto drop, or common-battery relay, or signal coil, is mechanically disconnected at the jack springs by the movement caused by the plug.

Should the operator insert the plug in the answering jack, *I*, in response to a signal, the relay or drop would be disconnected at the jack springs, *B* and *C*. If the operator at another position should have a call for this line and should insert a plug in the multiple jack, *D*, the signal or relay winding would also be disconnected from the circuit leading to the telephone instrument at the jack contacts, *G* and *H*. The removal of the receiver, as before, would connect the line wires, *E* and *F*, and permit the energization of *A*.

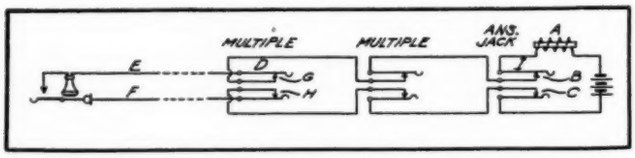


Fig. 135. Series Multiple Line Equipment.

344. *Objections raised to the series multiple arrangement.*—It is commonly supposed that the great number of jack contacts inserted in the line circuit in a large series multiple switchboard, is a possible cause of trouble. While this may be true in some cases, it is also true that many switchboards of this type are in successful and satisfactory operation and that the amount of trouble caused by the series arrangement of the multiple is *negligible* in many cases.

It would seem that the most serious objection to the series multiple arrangement lies in the undoubtedly greater cost, owing to the greater number of springs required per jack than would be demanded by the other arrangements. As will be seen later, the series multiple requires, at least, five contact points for each jack, while other methods make it possible to use a type that is much more simple.

345. *Cut-off relay and three-contact multiple jack arrangement.*—An arrangement permitting the use of multiple jacks on the telephone circuit but requiring jacks having only three contacts instead of five, is shown in Fig. 136. The general principle made use of is as follows: Jacks are used having two terminals for the telephone circuit proper, as before, and in addition a third contact which may also be used for the busy test between positions. When the line is in use in one position, other operators are notified of the fact over this wire. This terminal of the jack also forms part of an independent circuit over which the control of means for disconnecting the signal may be had.

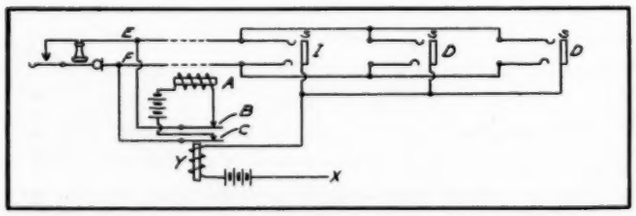


Fig. 136. Multiple Line Equipment with Cut-Off Relay.

It is plain that if the terminal, *X*, of the battery, Fig. 136, be connected in any way with the sleeve contact, *S*, of one of the multiple jacks, *D*, or the answering jack, *I*, that the relay, *Y*, will be energized and will relieve the line of the relay or drop, *A*, by opening its contacts, *B* and *C*. By the use of the cut-off relay, the contacts of the line jacks are reduced to three. the line is carried through but one set of movable contacts, *B* and *C*, which are not included ordinarily in the talking circuit, and additional multiples may always be added by the simple expedient of extending the three wires from the jacks.

(To be Continued.)

Program for North Dakota Telephone Convention.

The program for the tenth annual convention of the North Dakota Telephone Association, to be held in New Rockford, N. D., March 28 and 29, has been announced by Secretary H. A. Livermore, as follows:

TUESDAY MORNING, 10 A. M.

Address of welcome, by Mayor J. W. Schwoebel of New Rockford, N. D.
Response, by Hon. Judge Carmody, Hillsboro, N. D.
Reading of minutes of last meeting.
President's address, L. D. Richardson, Fargo, N. D.
Report of secretary and treasurer, H. A. Livermore, Fargo.
Appointment of committees.
Visiting exhibits.

AFTERNOON SESSION, 2 P. M.

"Commission Regulation," by W. H. Stutsman, president of the North Dakota Railroad Commission.
"Publicity in Connection with the Telephone Business," by O. F. Bryant, Napoleon Telephone Co., Napoleon, N. D.
"A Subscriber's Idea of Telephone Service," by Rev. S. Hitchcock, New Rockford, N. D.
Question box conducted by J. O'Keefe, Cavalier, N. D.

TUESDAY EVENING, 8 P. M.

Entertainment of delegates by citizens of New Rockford.

WEDNESDAY MORNING.

Visiting exhibits.
"Taxation of Telephone Properties," by Carl O. Jorgenson, state auditor.
"Construction and Maintenance of Farm Lines," by C. B. Cockerill, Flaxton, N. D.
"Depreciation," by A. S. Rogers, chief engineer, Northwestern group of the Bell companies.

CLOSING SESSION, WEDNESDAY AFTERNOON.

"Our Relations to the Public," by Hon. Tracy R. Bangs, Grand Forks, N. D.
"Interstate Commerce Commission Accounting for Small Companies," by W. A. Pixley, general auditor. Northwestern group, of Bell companies.
Question box conducted by J. P. Smith, Beach, N. D.
Report of committees.
Election of officers.

WEDNESDAY EVENING 8 P. M.

Banquet.

American Association of Engineers Enlarges Its Quarters.

The American Association of Engineers announces that it has signed a five-year lease for suite 601-604 at 29 So. LaSalle Street, Chicago. This is the second time in nine months the new society has been compelled to enlarge its quarters. It has now a membership of 500, sixty-five per cent. of which is in and near Chicago and the remaining 35 per cent. scattered throughout the United States, Canada, England, Philippine Islands and even in South America.

Iowa Telephone Convention Held This Week.

As TELEPHONY goes to press the Iowa Independent Telephone Association is holding the concluding session of its twenty-first annual convention at the Chamberlain Hotel, Des Moines, Iowa. The convention opened Tuesday morning, March 14, and continued for three days. Full report of the proceedings will appear in next week's issue.

The Wisconsin Supreme Court on Physical Connection

The Full Text of Recent Decision of Highest Wisconsin Tribunal Upholding the Constitutionality of the State Statute in Regard to Physical Connection of Telephone Systems—Public Convenience and Necessity Defined—Final Installment

This brings us to a consideration of the injurious results which the appellant insists will flow from the statute and the order of the commission made thereunder. The first of these suggested is the most substantial. The local exchange of the plaintiff was constructed before that of the local company, at a cost of $240,000.

CONTENTIONS RELATIVE TO INJURIOUS RESULTS OF CONNECTION.

The local company is owned by resident stockholders who have been active in extending its business and have brought strong influence to bear on telephone users to patronize their company, with the result that a large exchange was built up to a considerable extent, at least, at the expense of the older company, because there has been a marked falling off in the number of its patrons since its competitor appeared in the field. The exchange of the local company being now much larger than that of the plaintiff, it is more attractive and perhaps more useful to a telephone user than is that of the plaintiff.

The appellant contends, logically enough, that the only substantial hold which it has on so much of its business as remains, is the advantage it can offer its subscribers of direct toll connections with all important points in the United States and Canada; that it is entitled to this advantage, and that if taken away, its local exchange will inevitably lose most of the business it has and its investment will be largely destroyed, because the value of its property will be reduced at least 50 per cent.

It further contends that not only will its business and property be largely destroyed, but that such business will be transferred to a competitor without a cent of compensation; and that such a result would be an unlawful taking of property, practically to the same extent that a law would be which allowed railroads to operate their properties but prohibited them from exacting any substantial compensation for the service performed.

The railroad commission substantially finds that an unconditional order for annexation would produce the results claimed, and such finding is well supported by the evidence offered and appears to be an entirely reasonable result to reach. The conclusion of the commission, however, was that from a practical standpoint the case stated was really a hypothetical one and one to which the law did not apply.

As before stated, it took the ground that a connection could not be ordered if it resulted in substantial loss to either of the companies involved; and that, inasmuch as it was empowered to fix the conditions under which the connection should be made, the question before it in any given case was: Could connection be made on lawful conditions that would obviate substantial loss? If so, it was empowered to act, provided other requisites existed. If not, the case was one which would fall without the statute and one where it has no power to order a connection.

Section 2 of the statute quoted, provides that in case the utilities interested shall fail to agree upon the physical connection desired, or upon "the terms and conditions upon which the same shall be made," the railroad commission may fix such "terms and conditions" on proper application. After stating that the law did not contemplate a physical connection which would render the earning power of the local exchange of the plaintiff practically nil, the commission in its decision proceeds:

> No subterfuge can be indulged under the statute which will have the effect of depriving any private property employed in a public service, of its earning capacity.

In the peculiar situation found in the instant case, it is possible to prescribe terms and conditions which will preserve the interests of the utilities respectively after the connection has been made. The subscriber of one company desiring toll service over the lines of the other company must pay in addition to the rate charged the patrons of the latter company, a reasonable compensation for the additional service. Neither company will be permitted to absorb such additional charge, but the same must be paid by the patrons of either company using the toll lines of the connecting company.

This will not result in any discrimination between subscribers of the same exchanges, but will result in a just and necessary discrimination between the subscribers of the two exchanges. A subscriber, who has not installed the telephones of both exchanges, is not entitled to the toll service of both exchanges without paying an additional charge to the exchange with which he is not connected when desiring to use its toll line facilities.

There is no evidence showing that any irreparable injury will or can result to the owner or other user of the facilities of the respondent companies. Under the terms and conditions outlined above, the business of each other with respect to existing local business will be the same as at present. Certainly neither can suffer any injury under the circumstances.

In the order presently before us the terms and conditions were not definitely fixed because the parties had the right to agree upon them if they were able to do so. Being unable to agree, the commission made a subsequent order, which will be found in Winter vs. Telephone companies, 15 Wis. R. O. Rep., 36, 42. While this order is not directly involved in this proceeding, it is instructive as illustrative of what the commission had in mind. The part of it material to this case is as follows:

> It is further ordered, That each subscriber of the Wisconsin Telephone Co. desiring service over the toll lines of the La Crosse Telephone Co. shall be charged for each message, in addition to the regular charge of the La Crosse Telephone Co., as follows:
>
> 1. For all distances of not over 50 miles from the office of the La Crosse Telephone Co., 5 cents; for all distances over 50 miles and not over 100 miles from such office, 10 cents; and for all distances over 100 miles from such office, 15 cents. All distances shall be measured by air line.
>
> It is further ordered, That each subscriber of the La Crosse Telephone Co. desiring service over the toll lines of the Wisconsin Telephone Co. shall be charged for each message, in addition to the regular charge of the Wisconsin Telephone Co., as follows:
>
> 2. For all distances of not over 50 miles from the office of the Wisconsin Telephone Co., 5 cents; for all distances over 50 miles and not over 100 miles from such office, 10 cents; and for all distances over 100 miles from such office, 15 cents. All distances shall be measured by air line.
>
> 3. Neither of the companies shall absorb any such additional charges, but shall collect the same from its subscribers; but each of the companies shall be liable to the other and shall pay to the other the long distance tariff toll plus each additional charge.
>
> If this division of tolls, after a fair trial, shall be found to be inequitable, and the companies cannot agree upon a proper division of the tolls, the commission will by supplemental order establish such division.

It will be observed that the commission takes the position that the physical connection desired could be made without taking the plaintiff's property in the constitutional sense and without detriment to it. There is evidence pro and con as to the effect of such connection.

It is necessarily opinion evidence, and in the absence of testimony showing the effect of operation under the order, it is impossible to say that the commission is not right. Its judgment is that the extra charge provided for will deter

present subscribers to the local exchange of the plaintiff from discontinuing the use of the Bell telephone and substituting that of the local company.

Judgment of Commission Should be Tested.

The correctness of this judgment should be subjected to the acid test of experience before it is condemned. The law makes provision for the protection of plaintiff's rights if they have been unduly trenched upon. Section 3 of the act provides that the order of the commission may be revised from time to time on the application of any interested party for by the commission acting on its own motion. Any order made on such application would, of course, be reviewable by the courts.

It is suggested that it was not within the power of the railroad commission to make such a regulation as it proposed to make in its original decision and as it afterwards made in its supplemental order. If these orders were made on the theory that there was a taking of property for which compensation should be made and that such property was paid for by the exaction of the extra charge provided for, we do not see how they could be sustained, because no power of condemnation is conferred on the commission.

The orders, however, are made on the theory that there is no taking. The charge is exacted because an extra service is furnished to those who take advantage of the connection and for the purpose of removing any inducement there might be on the part of plaintiff's subscribers to quit it, because of the connection, and become patrons of the local exchange of the rival company.

The purpose of the regulation is not to pay for any taking of property, but to prevent incidental loss that might result to the plaintiff from the connection. Viewed in this light, we see no objection to the regulation and think it comes fairly within the statute.

We shall not discuss in detail objections (b), (c) and (d), hereinbefore enumerated, as much discussion would serve no useful purpose. The commission, of necessity, must have concluded that such objections were not well taken, or that they could and would be obviated by the regulations which it intended to prescribe. Sufficient answer can be made to all of them in the absence of any showing, as to the practical effect which the connection has had upon the revenues of the plaintiff.

It was stated on the argument that a physical connection was in fact made not long after the entry of the order of May 20, 1913. By the time the decision in this case is announced the parties will be able to present to the commission, if they so desire, facts instead of theories and opinions, and if the conclusion first reached proves to be wrong, it can be rectified.

The Constitutionality of Physical Connection Law.

The constitutionality of the law is attacked as well as the validity of the order of the commission made thereunder. If the law was correctly interpreted by the commission, there is no substantial basis for asserting that it is subject to any constitutional infirmity. If a mistaken interpretation has been placed upon it, another question arises, because it is essential to know what a law means before we proceed to pass upon its validity.

The uncertainty in this case, if there is any, arises out of the meaning of the words "irreparable injury" as used in the act. The phrase is most frequently found in the books in cases dealing with equity suits, irreparable injury being the basis on which most equity actions rest. As there used, this court has said an injury is irreparable when it is of such a nature that the injured party cannot be adequately compensated therefor in damages, or when the damages which may result therefrom cannot be measured by any certain pecuniary standard. Eau Claire Water Co. vs. city of Eau Claire, 127 Wis. 154, 159; Wilson vs. city of Mineral Point, 39 Wis. 160.

The appellant urges that the legislature has this definition in mind when it passed the act, and that, inasmuch as the physical connection would result in serious loss to it in the particulars claimed, and the amount of such loss could not be ascertained, the commission had no authority under the law to order the connection. The commission meets this by saying that the plaintiff would suffer no loss if the connection were made under proper regulations.

It would seem apparent that the legislature did not use the phrase in the sense referred to. While situations would arise where the damages resulting from ordering a connection could not be adequately compensated for or measured in money value, cases might just as well arise where they could be.

The legislature hardly intended that where the amount of money compensation could not be fixed, no connection should be made, while, if the amount of damages that would result could be ascertained, then a connection should be made. The owner would be just as much entitled to relief in the one case as in the other, although the character of the relief might be different. There is no provision for compensation in the act, so none could be recovered where damages resulted and were ascertainable, although a connection would have to be made. Such a construction would, to say the least, raise grave doubts as to the validity of the law.

Meaning of Phrase "Irreparable Injury."

The objection to the suggested meaning of the phrase, "irreparable injury" holds good, whether we consider that the legislature had in mind the legal definition of the word "injury" or the popular meaning of it. If loss results which the state cannot inflict in the exercise of the police power, the loser is entitled to compensation; and this right exists where the damages can be ascertained to a certainty as fully as where they cannot be. We conclude that the legislature did not use these words in the sense in which they are understood in equity law.

There is some doubt as to whether the legislature used the word "injury" in its popular or in its legal sense. Ordinarily the word injury is used to designate a thing which inflicts harm or damage, but a thing which inflicts more than a slight loss—Century Dictionary. And the word "irreparable" means something that cannot be repaired or recovered or made good.

So where there is substantial loss or damage which is not recoverable, it is entirely correct to say that there is irreparable injury. Losses caused by fire where there is no insurance, or by flood or pests, as well as many others, are commonly and properly referred to as irreparable injuries.

The generally accepted legal definition of the word injury is more restricted. A thing done is said to be an injury when it violates a legal right of a party. Certain acts which inflict loss are held to be *damnum abque injuria*. Some authorities interpret the phrase as meaning "injury without wrong" (Bouvier, Volume 1, 494), and other, "loss without injury" (Words and Phrases, Volume 2, 1823), and still others, as "a loss without wrong" (13 Cyc. 255). Losses are frequently occasioned by a legitimate exercise of the police power for which no recovery can be had because no legal right has been violated.

The words, "irreparable injury," found in this statute are used in one of the two senses last referred to. It is not very material to a decision of this case which definition is adopted, but the question is directly before us and it may be important in the administration of the law to suggest what we deem to be the true interpretation.

If we say they are used in the sense last discussed, then the words perform no function and are mere surplusage, unless we say that what the legislature meant was to require a physical connection in every case where in the exercise of its police power it had the right to require it, provided public convenience and necessity would be thereby promoted and substantial detriment to the service would not follow.

This construction would require the connection to be made unless it would result in legal damage to or violate a legal right of one of the parties concerned. By legal damage we

mean loss which the state could not lawfully inflict under its police power and which, of course, would not fall within the class of wrongs to which the rule of *damnum abque injuria* applies.

This would be an unusual form of legislation, to say the least. It is equivalent to a command in the first instance to make a physical connection, provided the state in the exercise of its police power has the right to order it. The utilities would have to decide in each instance whether the power was exceeded or not. If one or both of them should decide against the connection, then the question, which is one of law, is passed up to the railroad commission for decision under the second section of the act.

This is an administrative body which is not created for the purpose of deciding grave constitutional or even legal questions. Incidentally, it may in carrying on its function, be called upon to state what its construction of existing law is. This is very different from calling on it for decision as to whether a statutory requirement is within or without the police power.

The Question of Company Sustaining a Loss.

The question whether a telephone company would sustain a loss in a given case by return of a physical connection is one of fact. But if loss be found, the question whether the state has the right to inflict it without compensation, is one of law. The impropriety of attempting to vest this kind of jurisdiction in the railroad commission is well pointed out in C. & N. W. Ry. Co. vs. Railroad commission, 155 N. W. Rep. 941.

The situation presented is such that it is difficult to see how substantial loss would result to one utility in case a connection was ordered, without resulting in a corresponding benefit to the other. If such other is benefited, it should in all fairness be required to pay. It is hardly conceivable that the legislature had a purpose in mind to discriminate against public utilities by taking away the business of one without any compensation and handing it over to the other, if we were to concede for the moment that it might do so.

Public convenience and necessity might possibly be promoted by entirely doing away with the local exchange business of the plaintiff, assuming that this could lawfully be accomplished. But such convenience and necessity does not require that its business be in effect handed over as a gift to its rival. If the right exists to do away with this asset, then the right exists to compel the beneficiary to pay for it. Both companies are in La Crosse because the people, through their representatives, granted them franchises.

The inconvenience of having two local telephone systems in a city is obvious to anyone familiar with their operation. Assuming that efficient regulation can be had, duplication cannot be justified from any economic standpoint, and the legislature has recognized this fact in the law under consideration (section 1797m-74).

Commission's View of Statute, a Correct One.

In dealing with existing situations, it is not supposable that it did not intend to deal with them equitably; and it is our opinion that the commission took a correct view of the statute and that such statute does not contemplate that a connection should be made where it would result in substantial loss to one of the utilities affected thereby, and that the word "injury" was used to denote substantial financial loss.

The connection ordered, entailed some expense upon the plaintiff. This expense was incurred in providing a facility that was convenient to the public in transacting business with plaintiff and can in no correct sense be regarded as a loss. Neither could the amount of it be considered substantial in a matter of this kind.

We construe the statute as not authorizing physical connection if it would deprive the plaintiff of the beneficial use of its local exchange. If the facts found are correct, no such result will follow, and we cannot say that the findings of fact are not correct. This eliminates the contention of the plaintiff that is most forcefully urged.

Plaintiff's counsel further argue and quote strenuously, that the use of its wires and of part of its switchboard and distributing frame is taken from it by the order of the commission and given to the La Crosse Telephone Co. without compensation. Whenever the wires of the plaintiff are reached and used over those of the local company, this is claimed to be a taking of the plaintiff's property for the use and benefit of that company because plaintiff is deprived of its property while the use continues.

No Taking of Property Without Compensation.

We do not understand this to be the situation or the legal effect of what has been done. We do not see how it can be said that the La Crosse company either takes or uses the wire or appliance of the plaintiff. Whatever appropriation there is, is by the person who is using the wire and for this he pays the regular toll charge and something additional besides.

The patron is using the precise thing which the plaintiff has to sell, the thing from which its earnings are derived, and the thing which it is obliged to furnish the public. It is difficult to see how a patron of the La Crosse company by using its local exchange to connect with the Bell company's toll line, is taking the property of the latter to any greater extent than he would be if he stepped into its central office and had the party he desired to reach, called from there.

It is true that a connection must be established between the wires of the local company and the switchboard of the plaintiff. To say that this is a taking of property is far-fetched. There may be a technical appropriation, but there is no taking in the constitutional sense. Neither would be the fact that there was some expense incurred after the situation, because it is the right of the state within reasonable limitations to require public service corporations to increase their facilities where the public interest requires the increase.

Instead of damage resulting from the connection ordered, it would be more reasonable to suppose that both profit and convenience would result therefrom. We do not see how the switchboard connection required, can entail any substantial loss upon the plaintiff. If it should be conceded that there was a taking of the plaintiff's property by either of the requirements referred to, it is a technical taking that results in no loss and it is entirely within the legitimate scope of the police power.

The legislature has seen fit to exercise such power, provided no substantial loss would result. The authorities we deem to be quite conclusive on this point, Wis. etc. R'd Co. vs. Jacobson, 179 U. S. 387; Michigan Cent. R. R. Co. vs. Michigan Railroad Commission, 236 U. S. 615; Grand Trunk Ry. Co. vs. Michigan Railroad Commission, 231 U. S. 457; C. M. & St. P. Ry. Co. vs. Iowa, 233 U. S. 234; Oregon R. R. & N. Co. vs. Fairchild, 224 U. S. 510; Atlantic Coast Line R. Co. vs. North Carolina Corporation Commission, 206 U. S. 1; Minneapolis & St. Louis Ry. Co. vs. Minnesota, 193 U. S. 53; Pacific Telephone & Telegraph Co vs. Wright-Dickinson Hotel Co., 214 Fed. 666; Pioneer Telephone & Telegraph Co. vs. Grant County Rural Telephone Co., 119 Pac. 968; same vs. same, 134 Pac. 398; Hooper Telephone Co. vs. Nebraska Telephone Co., 147 N. W. 674; State vs. Skagit River Telephone & Telegraph Co., 147 Pac. 885.

Under the facts found and sustained by the evidence, irreparable injury within the measuring of the statute did not result to the plaintiff from the order complained of. We do not think that the order resulted in any taking of the plaintiff's property; but if there is a taking, it has not resulted in substantial damage or irreparable injury and is one which the legislature had a right to provide for.

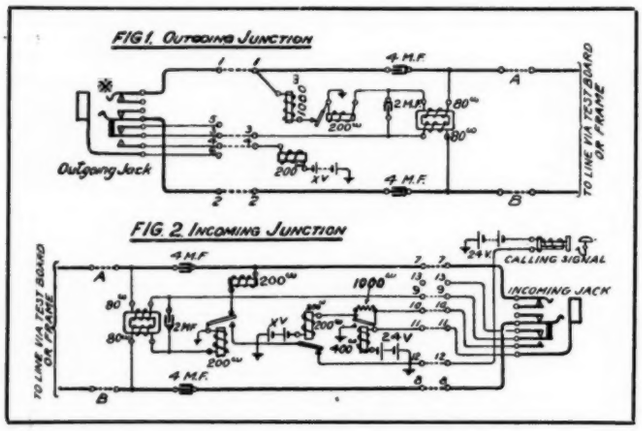
By the Court. The judgment appealed from is affirmed without prejudice to the right of the plaintiff to make a subsequent application to set the order aside if it so desires.

Digest of Telephone Articles in Various Publications

Prepared by Arthur Bessey Smith

TRUNK AND JUNCTION CIRCUIT DEVELOPMENT, by I. H. Jenkins and H. W. White. The Post Office Electrical Engineers' Journal; Volume 8, part 4, January, 1916; pages 281-302, 38 circuit diagrams.

This article deals with the problems which arose by the transfer of the toll lines from the old National Telephone Co.



Common Battery Junction Line Circuits.

in England to the post office department of the British government. Formerly the country was divided into separate areas, within each of which connections were made between exchanges by "junction lines" (trunks). Connections between areas were set up through a junction line to the center of the area, thence through a "trunk line" (toll line) to the center of the other area, and over a junction line to the distant exchange.

When the system was taken over by the post office, this indirect method was abolished and more direct lines run so as to avoid much needless looping to and from the centers of areas. Common battery exchanges, local battery, and common battery signaling exchanges had to be connected with the least transmission loss, and the working out of the circuit details is given quite fully.

In the case of the junction lines (Fig. 1 and 2), signals are transmitted separately over the two sides of the line, with earth return. Since the lines have a maximum length of 60 miles, and the insulation may be one-tenth megohm per mile one day and infinity the next, the relays are always placed at the end of the line away from the battery. Many interesting circuit details are shown and discussed.

THE COLLAPSE OF IRON POLES AT BRIGHTON, by C. T. Crisp. The Post Office Electrical Engineers' Journal, Volume 8, part 4, January, 1916; pages 302-308, 6 views.

The English post office has not favored iron poles because of first cost and the feeling that they are not strong enough. Some satisfaction is therefore to be found in the failure of six iron poles, which was caused by a van backing into one of them and breaking it off. The others broke in rapid succession because of the stress thrown upon them. It is to be noted, however, that these poles were made of wrought iron tubing held by a *cast iron* base. It was the base which broke in every case (Fig. 5). American experience has been chiefly with all steel poles set in concrete, and the results have been contrary to the foregoing.

TRANSATLANTIC AND LONG DISTANCE WIRELESS TELEPHONE DEMONSTRATIONS. The Post Office Electrical Engineers' Journal, Volume 8, part 4, January, 1916; pages 326-328.

This short article discusses rather generally the wireless telephone transmission which was carried on between the United States naval radio station at Arlington and Pearl Harbor, Honolulu; also from Arlington to the Eiffel Tower station, Paris. The success was due chiefly to the so-called vacuum valves, or gas-discharge relays, at both ends of the system.

Professor Fleming's investigations are recalled as the keystone of the arch upon which this successful demonstration is supported. Dr. Lee de Forest is quoted as saying that this very long distance reception is due to the audion detector and audion amplifier at the receiver, and that the large audion bulb is a generator of high frequency energy. Prof. Pupin and Nikola Tesla announce that they have discovered means of eliminating the effect of atmospheric disturbances on wireless telephone systems.

THE CONSTITUTION OF A LOW TARIFF AREA AND THE STUDY OF THE BEST MEANS OF LAYING OUT A LARGE AREA, by T. F. Purves. The Post Office Electrical Engineers' Journal, Volume 8, part 4, January, 1916; pages 336-342.

This is a set of notes which the author prepared for the conference of telegraph and telephone engineers which was to have met at Berne, Switzerland, but was postponed on account of the war. He treats of the factors entering into the fixing of tariffs for the use of telephone service, giving an important place to the grade of transmission which it is intended to give.

The English post office has made interconnection between any two telephones in the kingdom the basis of its telephone operations, but two exceptions may be admitted: (1) Party lines in sparsely-settled rural districts serve a real need though essentially local in nature. (2) International telephony may lead to special installations equipped with expensive apparatus suitable for very long distance transmission over high-grade toll lines.

Though the post office people find that good conversation is possible between common battery stations on 30-ohm loops connected by 46 miles of standard cable, the minimum commercial standard is a 35-mile trunk. The post office has determined to establish nine zone centers and to connect them by main trunk lines of the best possible efficiency. Secondary centers will be established to facilitate the distribution of traffic. The allowable losses are discussed. Party lines, while a product of flat rate conditions, tend to develop the telephone habit, but have no place in a *commercial* community.

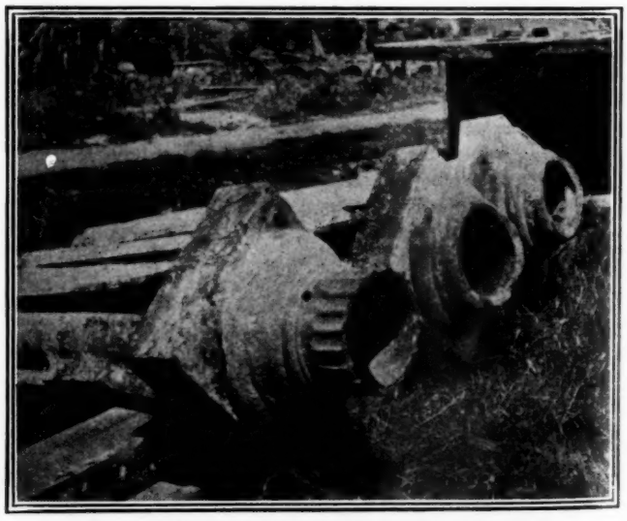


Fig. 5. Broken Cast Iron Bases of Three Poles.

THE ORGANIZATION OF SCIENTIFIC RESEARCH, by J. A. Fleming, D. Sc. F. R. S. The Electrician, (London) February 18, 1916, pages 710-712.

In America the telephone industry is just now taking interest in the standardization of its methods, apparatus and measures and is asking Congress to set aside money for scientific research to benefit the industry. In England the conditions brought about by the war have stirred people to a keener interest in research and the question is being actively discussed.

Though the government proposes to conduct research, the author of this paper argues that the work should be handled by the scientific men themselves through organizations already in existence. He shows how the beginning of the war found England cut off from her supplies for laboratory work (German made) and urges that a bureau distribute information as to sources of supplies and methods of making apparatus and supplies. He also discusses the training of men in scientific research.

TELEPHONE CABLES, by E. F. Petritsch. Electrical World, Vol. 67, No. 7, February 12, 1916, pages 387-388; abstracted from Elek. u Masch. (Vienna), September 12 and 19, 1915.

This paper deals with experiments on cables loaded by the Krarup system, winding iron wire around the conductor. This was done because of some mechanical difficulties experienced in inserting Pupin coils. The cable wires were 2 mm. thick, and were wound with one, two, three, and four layers of soft iron 0.3 mm. wire so as to find out which gave the best results.

The illustration gives the results in the form of curves of attenuation coefficient according to frequency; O is the unloaded cable and 1, 2, 3, and 4, the curves for the pairs treated with the several layers of iron wire; *P* is the "pupinized" pair. This shows that one layer is almost as efficient as more, but that the Pupin coils gave the best results. If the cable must be connected to ordinary line, the uniformly loaded cable gave the better results, because of reflection.

A TRAFFIC DEPARTMENT IN THE NEAR EAST, Part II, by Florence J. Minter. The Telegraph and Telephone Journal (London). Vol. 2, No. 17, February, 1916; pages 97-100, five views.

The author continues her interesting account of telephone business as it was conducted in Constantinople before the war, dealing chiefly with those phases of human nature brought out by the telephone business. Real Turks were in the minority, other races predominating. The effect of Eastern civilization was shown in the large salaries expected by all, though wholly untrained for the work expected. It was a shock to them when their recommendations were brushed aside and their fitness tested by examinations as to knowledge and actual ability.

They have a high opinion of their own ability and attempt anything. The cashier forced his balances by adding money when he came short and pocketing the surplus when the book came "long." The author was kind enough to attribute no dishonest intentions to the man. The explanation for failure to complete work (due to laziness) was thought sufficiently excused by saying "I got tired." However, by persistent weeding, a fairly good staff was obtained. The period of service for women (chiefly operators) was short, marriage being the inevitable end of woman. Difficulty was experienced in getting the operators and supervisors to use the standard expressions and methods of work.

PHONOGRAMS, by B. R. Mead. The Telegraph and Telephone Journal (London). Vol. 2, No. 17, February, 1916, pages 110-112.

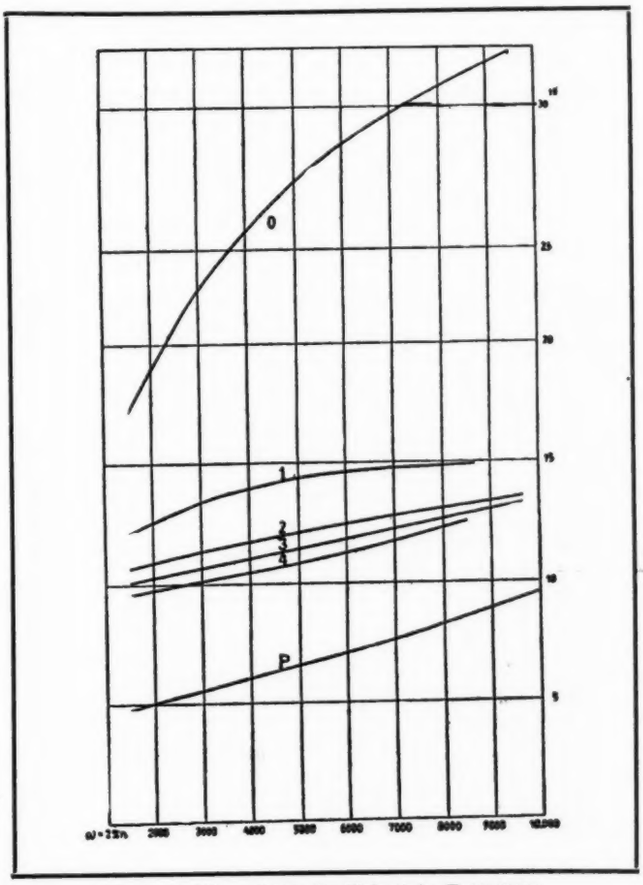
The author discusses the relationship between telegraph and telephone for sending messages from city to city, and the methods for handling the work efficiently and effectively. He makes three points:

(1) Transmission must be good over the route selected.

(2) Facilities must exist for the expert handling of the messages both telephonically and telegraphically.

(3) The message should reach the telegraph department at the point where it can be handled economically and transmitted with the least possible delay.

Nearly all messages are telephoned to or from the subscriber. More staff is required to receive messages than to deliver them to the subscriber. An operator is employed to distribute the outgoing and incoming calls to telegraph and telephone operators who record and read messages. The advantage of using telephonists over telegraphists is shown in the smaller percentage of complaints of poor voice transmission when the former handle the messages.



Ratio of Attenuation Coefficient to Frequency.

The paper is commented on by J. Bailey, who takes issue with the author on details of the distribution board, the segregation of stalls (operating position for dealing with the public) and the advantages of using telephonists.

Proceedings of A. I. E. E. for March.

In the Proceedings of the American Institute of Electrical Engineers for March, 1916, Joel C. R. Palmer, telephone engineer and patent expert of the Western Electric Co., New York, is reported to have been elected a member of the institute. In addition the following telephone men are reported to have been elected associates of the institute:

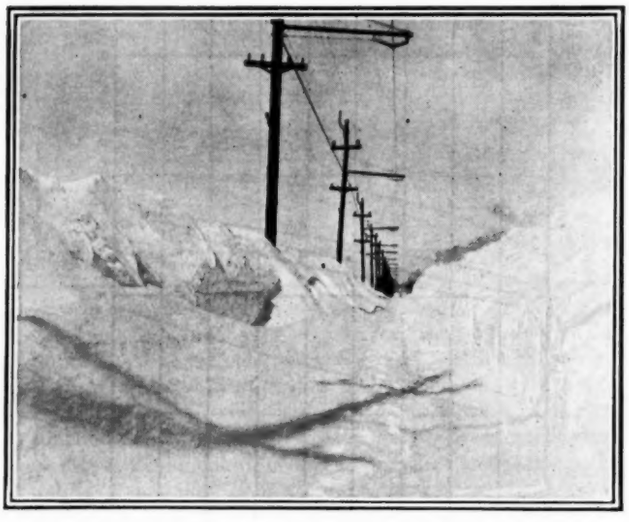
C. P. Bartgiss, engineer, A. T. & T. Co., New York; G. D. Edwards, telephone transmission engineering department, Western Electric Co., New York; Raymond Foulkrod, engineering department, Bell Telephone Co. of Pennsylvania, Philadelphia, Pa.; I. C. Hackensmith, telegraph and telephone inspector, Interstate Commerce Commission, Kansas City, Mo., Kansas City, Mo.; A. W. Hardy, assistant telephone engineer, Oklahoma Corporation Commission, Oklahoma City; C. G. Hill, electrical engineer, Chicago Telephone Co., Chicago; C. J. Hogg, line assignor, New England Telephone & Telegraph Co., Brookline, Mass.; E. W. Vanderfield, telephone engineer, Western Electric Co., Hawthorne, Ill.

Northern White Cedar Produced Under Great Difficulties

Production of Northern White Cedar Poles Severely Curtailed Due to Unfavorable Weather Conditions, Labor Conditions and Shortage of Cars for Hauling—Telephone Companies Are Urged to Make Early Arrangements for Their Requirements

The present winter has been most unfortunate for the producers of Northern white cedar poles. In the early part of the season there was every prospect of a good winter's work in the woods and loggers planned to cut on a large scale. All went well until the early part of January, which is just about mid-season in the Northern woods.

The severe weather which started about that time changed conditions very materially. The woodsman likes snow, but the snow this year was very heavy, being three



One Factor that Hindered Operations in the Cedar Forests.

to six feet on the level. This snow was preceded by mild weather and the cedar swamps were not frozen sufficiently to form a good foundation for the necessary roads, so even if a road were broken through the snow, the lack of foundation made it impossible to haul even normal loads.

This heavy snow made it necessary to stop operations for a while. After this spell of weather cleared up, the woodsmen went at it again, but on a smaller scale. After getting nicely started there was more snow, and it would seem that the elements had conspired to make it impossible for the woodsmen to accomplish sufficient to make it profitable to continue operations. As late as February 7 the entire Northern country was visited by a 45-hour blizzard, which left another extreme depth of snow to contend with.

The labor situation has been very grave since early in December, men being very scarce and the scale of wages at a very high mark. It is reported that the labor situation in conjunction with the weather conditions made it necessary for many operators to discontinue further cutting early in January, thinking they would do well hauling from the woods the material already cut. Later reports indicate that they will not even accomplish this hauling, and large amounts of material which is buried under the snow will not come out this winter at all.

To cap the climax, the railroads seem to be—in fact, they acknowledge that they are—powerless to furnish even a small percentage of the equipment that is required. It would seem impossible to have a really severe car shortage in view of the enormous rolling stock of the various railroads; but nevertheless it is true, and cars are very much at a premium, with no prospect of material relief until well into the summer.

One of the largest trunk lines running west of Chicago, on which the Northern producers depend for a large percentage of their equipment, have 24,000 cars tied up in the Eastern territory, and they frankly state that they cannot offer any encouragement on equipment. They are selecting their freight with a view to best earnings, which of course does not include cedar poles, this commodity being considered low-grade freight by the railroad company.

This combination of circumstances has made it necessary to ship very heavily from stocks carried over from the past year, leaving the supply greatly reduced. It is evident that the production this year has been severely curtailed, and instead of a good sized production, which was anticipated last fall, the output will be considerably below normal.

In view of the present high plane of values on all classes of material it is natural to expect advances in price of cedar poles. For those interested in this material it would seem wise to make the necessary arrangements as soon as convenient.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies, Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Air-Line Method of Figuring Foreign Exchange Mileage.

Following conferences with the Massachusetts Public Service Commission resulting from a complaint of C. I. Brink, Inc,, South Boston, the New England Telephone & Telegraph Co., has agreed to adopt air-line measurements of foreign exchange mileage, pending further consideration of the entire mileage schedule and of the readjustment of exchange boundary lines in the Boston metropolitan district.

The present schedule of mileage rates, in so far as it applies to the subscriber located within the central district, who is connected with a central office outside the central district, or to the subscriber located within an exchange area outside the central district, who is connected with a central office within the latter, will be charged as follows:

Air-line between the scaling center of the central district (Qld South Church) and the central office outside the central district with which the subscriber is connected or which is the normal central office.

Annual rates per quarter-mile or fraction:

Individual line	$0.10
Private branch exchange trunk line	.10
Minimum charge per circuit for foreign	.40

The Brink case arose from the company's previous method of charging for foreign exchange mileage. The complainant, a manufacturer located in South Boston, desired to obtain service in the "Main" Boston exchange, being listed in the telephone directory as a "Main" subscriber for the convenience and economy of his customers and prospective patrons. The complainant refused to sign the contract offered because the company proposed to charge him from the arbitrary scaling center on a route-mileage basis, instead of figuring the charge on the net route mileage between the Main and South Boston exchanges, or by air-line from the scaling center.

The complainant was charged $90 foreign exchange mileage in addition to the regular unlimited service rate of $125 per year, the former being based on a rate of $40 per mile. The company did not include the local circuit from the South Boston exchange to the complainant's place of business in its method of measurement, but did include 0.25 mile of underground cable line between the "Main" exchange and the Old South Church, this entailing a charge of $10 per year for equipment and distance not required in the service proposed.

At the hearing which the commission gave on this complaint, the company pointed out that the Old South Church was taken as the arbitrary scaling center for the reason that it is the theoretical location of a single, all-embracing Boston exchange, assuming that one such exchange could handle the traffic of the central district. Measurements by the inspectors of the commission showed that the actual distance between the Main and South Boston exchanges is 10,251 feet, or slightly below two miles. The central district at Boston includes six exchanges.

The company maintained that this foreign mileage charge should be high enough to discourage such a use of trunk lines by private parties and that the toll facilities of the organization as a whole would be embarrassed. It was brought out that the rate into Boston was $40 a mile and the rate outward was $20 per mile.

By the agreement of the company the inward and outward change will now be the same and the rate-mileage method will be abandoned for the air-line method, resulting in a reduction in the foreign exchange mileage rate as quoted the complainant, and harmonizing the method of charging with the rates and distances involved in other zones of business reached by the New England company's lines.

Ruling in Baltimore Rate Case.

On March 8, the Maryland Public Utilities Commission handed down its ruling in the Chesapeake & Potomac telephone case, in which it declares the earnings and rates approximately fair; cuts down the company's valuation of its property from $15,169,248 to $11,554,758; allows an earning rate of up to 8 per cent., and intimates that in the near future some steps may be taken toward a readjustment of telephone rates in some localities, but does not specify any particular community.

The conclusions of the commission are summarized as follows:

1. That the fair value for rate-making purposes of the property of the Chesapeake & Potomac Telephone Co. of Baltimore, Md., was $11,554,758 on June 30, 1914, the date of the inquiry in this investigation.

2. That the net income from operations for distribution during the year ending June 30, 1914, was $673,240, the same being at the rate of 5.82 per cent., upon the investment aforesaid, or at the rate of approximately 6 per cent. upon the average investment for the year ending on such date.

3. That the maximum return which the respondent company should be permitted to earn upon its property used in public service in this state is 8 per cent.

4. That the earnings of the company under its existing schedule of rates, taken as a whole, are not excessive, and a general reduction of said rates would therefore not be reasonable; nevertheless, the earnings of the company are such as to justify the passage of any order or orders which this commission may hereafter deem reasonably necessary to correct any of such rates which may be found upon further consideration to subject any particular person or locality to any unfair prejudice or disadvantage.

Chicago City Council Approves Sale of Automatic System.

By a vote of 46 to 22 the Chicago city council, on March 11, passed the ordinance authorizing the sale of the automatic telephone system of the Illinois Telephone & Telegraph Co. to the Chicago Telephone Co. The price to be paid for the plant is $6,300,000 and the city is to be paid $500,000 for permitting the sale of a property which by its franchise was to have been forfeited.

The ordinance permits the Chicago Telephone Co. to add only $1,532,058 to its capitalization. It is understood that the American Telephone & Telegraph Co. will assume the remainder of the purchase price.

A minority report was presented recommending that the ordinance be placed on file.

Before the deal can be consummated the automatic company must obtain the approval of the state public utilities commission and the attorney general of the United States.

It is reported that plans have been laid for stopping the sale. Mayor Thompson is to be asked to veto the ordinance. Judge Windes of the circuit court will be asked by the Public Ownership League to enjoin the sale of the property on the grounds that the property belongs to the city of Chicago by forfeiture. The state public utilities commission will be asked to stop the sale on the same grounds and the attorney general will also be appealed to.

Hearing on Indianapolis Merger.

In the hearing before the Indiana Public Service Commission on the merger of the Indianapolis (Ind.) Telephone Co., the New Telephone Co. and the New Long Distance Telephone Co., William Fortune, president of the Indianapolis company, testified that no increase in rates was contemplated, and no future increase is contemplated unless conditions warrant it.

H. F. Farwell, president of the Citizens Telephone Co., Terre Haute, and president of the Indiana Independent Telephone Association, said that every Independent telephone company in the state approved the merger.

There was a discussion of the financial affairs of the companies involved, and, the commission, after hearing much pro and con, requested that a statement of who owned the stock now and who would own it after the merger be prepared and filed. The hearing will be resumed when this information has been compiled.

W. A. Pickens, corporation counsel for Indianapolis, was present at the hearing, and made inquiries about the earnings and the ability of the company to pay dividends. Mr. Fortune testified that the company would pay interest on the bonds, a dividend of 6 per cent. now and later 7 per cent. on preferred stock. The new issue of bonds will be underwritten at once and sold as quickly as possible after the commission's approval to the merger is made.

Ruling in Bicknell (Ind.) Telephone Case.

Judge Willoughby in the circuit court at Vincennes, Ind., has rendered a decision in the suit brought by a number of farmers about Bicknell against the Bicknell Telephone Co.,

in favor of the plaintiffs. The defendant is ordered to furnish telephone service to the plaintiffs at the contract rate.

A short time ago the defendant discontinued service to its rural patrons—the plaintiffs—because they refused to pay 50 cents per month for such service. Under a contract entered into previously between the plaintiffs and defendant, the charge for such service was 25 cents per month. The rate of 50 cents per month having been established without the approval of the public service commission, the court held that the previous contract was binding. This ruling not only affects the petitioners but all subscribers on the same lines leading out of Bicknell.

Independent Authorized to Buy Columbus (Neb.) Bell Plant.

A merger of the two telephone exchanges at Columbus has been authorized by the Nebraska State Railway Commission, accompanied by an increase of rates, ranging from 25 cents to $1 per telephone. The Platte County Telephone Co. is authorized to take over the Bell company's exchange, paying therefor $1,000 in cash and giving $14,000 in notes. To take care of this $15,000 indebtedness the Columbus company is given permission to issue $15,000 of stock.

Business rates, under the new schedule, will be $2.50 and $3. Residence rates will be $1.25, $1.50 and $1.75.

The rate increase was granted on condition the telephone company comply with a city ordinance, requiring all telephone companies to place their wires underground, that the two plants and service be consolidated, and overloaded farm lines be reduced, not to exceed ten subscribers on a line, and that the company maintain its accounts in the form prescribed by the commission.

The commission found that the Platte County company has not paid on an average of more than 4 per cent. in dividends, without making adequate provision for maintenance and depreciation.

Bill for Commission Regulation in Kentucky.

The Helm-Crowe bill, which provides that telephone and telegraph companies operating in Kentucky will come under the jurisdiction of the state railroad commission, was passed in both houses of the legislature with little or no opposition. As the measure was an administration bill, it is believed that the signature of the governor is assured. Under its terms the commission will have the power to regulate the rates of telephone and telegraph companies.

Bill for Workmen's Compensation in Kentucky.

Kentucky will probably be added to the list of states where workmen's compensation laws are in force. The state legislature has enacted a measure which is practically compulsory, since it deprives employers of five or more persons who do not accept its terms, of certain of the customary common law defenses. It provides for insurance with commercial or mutual companies, and does not create a state fund.

The bill is now before the governor for signature.

To Prohibit Condemnation of Railroad Right-of-Way.

The Western Union Telegraph Co. has lost in its battle in the Kentucky state legislature to prevent passage of a bill which would prohibit condemnation of railroad rights-of-way for other purposes, introduced by Senator S. L. Robertson, of Louisville. This is the measure over which the Louisville & Nashville Railroad and the Western Union have been having controversies by the aid of paid space in the newspapers. It passed the senate by a vote of 31 to 2, that body declining to hear from representatives of the two interests, and in the house was carried by a vote of 84 to 10. It now goes to the governor. There is much feeling apparent in connection with the bill, and litigation is looked for.

Consolidation Question to Be Submitted to Referendum.

Kentucky voters, at the next general election, are to vote on the proposed constitutional amendment, which would permit consolidation of competing telephone companies. This will be at the coming November election, provided there is no hitch intervening. Sentiment, as expressed by the newspapers of the smaller cities of the state, seems generally to be favorable to the amendment.

Summary of State Commission Hearings and Rulings.

ALABAMA.

March 14: Hearing on petition of the city commission of Birmingham, Ala., for permission to inspect the books of the Southern Bell Telephone & Telegraph Co., to determine how much the company has invested in Birmingham and how great its profits are in order to determine whether or not the rates for service in that city should be decreased. A short time ago a complaint was filed by the city commission asking that the rates in Birmingham be ordered reduced, and a hearing in the matter has been set for April 3.

CALIFORNIA.

February 29: Order authorizing the Roseville Telephone Co., of Placer county, to issue $1,670 worth of stock to reimburse its treasury for money expended for additions and betterments.

CANADA.

March 13: Hearing at Bracebridge, Ontario, by the Ontario Railway & Municipal Board, when the question of the Muskoka & Bracebridge Telephone Co. will be considered, and the possibility discussed of some municipal system in that immediate locality.

FLORIDA.

March 2: The commission ordered that a penalty of $101 be imposed upon R. L. Brown, doing business as the Hastings Telephone Co., for violation of sections 4, 7 and 18 of chapter 6525 of the laws of Florida, acts of 1913, relative to the filing of rates, schedules, copies of contracts, etc. Following the issuance of this order, however, the commission passed a resolution that the penalty will not be enforced so long as B. L. Brown shall continue to observe and abide by the chapter of the laws referred to and otherwise comply with the rules adopted by the railroad commission for the government and regulation of telephone companies. Order No. 508.

March 17: Hearing at Wellborn, Fla., in the matter of the petition of the Little River Telephone Co. for permission to readjust its rates and charges for service at Wellborn. The company, in its petition, asks permission to make a toll charge of 25 cents to non-subscribers, to establish a rate of $2 per month for rural and residence service and $2.50 for business stations. Notice No. 104.

April 11: Hearing in the matter of free or reduced service given and discriminations in service and rates for service made by the Home Telephone Co., of Jacksonville. Notice No. 105.

ILLINOIS.

March: Petition filed by the Morrison (Ill.) Telephone Co. for permission to increase its rates. The company has rebuilt its system, and improved the service generally.

March 9: Certificate of convenience and necessity granted the Murphysboro Telephone Co. to construct and maintain a telephone exchange at Hurst, Ill.

March 9: Roanoke Telephone Co. given permission to increase rate for business telephones from $12 to $18 per year and readjust other rates.

March 9: Olivet Telephone Co. given permission to issue capital stock in the sum of $1,000.

March 9: Savanna Mutual Telephone Co., of Savanna, and the Pitcher Telephone Co., of Warren, granted permission to operate their lines in connection with each other.

March 9: Alhambra Mutual Telephone Co. given permission to increase its rate for business telephones from $12 to $18 per year and to readjust other rates.

March 9: Flanagan & Dana Telephone Co., of Livingston and LaSalle counties, ordered to charge all subscribers, whether stockholders or not, $10 per year.

March 14: Hearing in Chicago on the petition of the Chicago Telephone Co. for an order authorizing the issue of $3,000,000 of its capital stock.

March 14: Hearing in Chicago on the petition of Coon Brothers Telephone Co., of Rantoul, vs. the Potomac Telephone Co., for permission to discontinue free service between Armstrong and Penfield.

March 14: Hearing in Chicago on application of Belvidere Telephone Co., for permission to discontinue rural service for the Boone County Rural Telephone Co., at Belleville.

March 15: Hearing in Chicago in the cases of the Polo Mutual Telephone Co. vs. the Grand Detour Mutual Telephone Co., Lanark Mutual Telephone Co., Rock River Telephone Co., Carroll County Independent Telephone Co., Milledgeville Mutual Telephone Co., Forreston Mutual Telephone Co., relative to rates and service between Polo and various points.

March 15: Hearing in Chicago on application of the Pitcher Telephone Co., for an order authorizing of its bonds in the aggregate amount of $35,000.

March 10: Hearing on application of the Cahokia Telephone Co. for a certificate of convenience and necessity to re-establish and operate a telephone exchange in Dupo, Ill.

INDIANA.

March: Hearing on petition for approval of the merger of the New Long Distance Telephone Co., the New Telephone Co. and the Indianapolis Telephone Co., of Indianapolis, Ind. Wm. Fortune, president of the Indianapolis company, testified that no increase in rates was contemplated and no future increase is contemplated unless conditions warrant it. The commission requested that a statement showing the present ownership of the stock in the companies involved and the ownership under the proposed merger be filed. The hearing will be resumed when this information has been compiled.

March: Petition filed by the Home Telephone Co., of Peru, Ind., asking for an increase in rates. The rates asked are as follows: One-party business, $36 per year; two-party business, $30 per year; one-party residence, $18 per year; two-party residence, $15 per year; four-party residence, $12 per year.

March 4: The commission dismissed the complaint of the Greencastle Telephone Co. against the Reelsville Telephone Co., under which a reduction from the 15-cent charge for message to subscribers from Greencastle to Reelsville was asked on the theory that the rate for messages from Reelsville to Greencastle was only 10 cents. An agreement between the parties resulted in the establishment of a 10-cent rate each way.

IOWA.

March 16: General hearing on the subject of interference of high tension lines with telephone and telegraph lines.

KANSAS.

March 9: The commission granted the Naponee Home Telephone Co., of Naponee, Neb., permission to operate in Phillips county, Kan.

March 9: The commission granted the Boicourt Mutual Telephone Co., of Boicourt, Kan., a certificate of public convenience and necessity.

MARYLAND.

March 8: The commission handed down its ruling in the Baltimore rate case. The earnings of the Chesapeake & Potomac Telephone Co. in the city of Baltimore, it held, were approximately fair. The commission cut the valuation of the company's property from $15,169,248 to $11,554,758 and fixed 8 per cent. as the maximum return which the company should be permitted to earn upon its investment.

MASSACHUSETTS.

March: Following conferences with the commission resulting from a complaint of C. I. Brink, Inc., South Boston, the New England Telephone & Telegraph Co. agreed to adopt air-line methods of measuring foreign exchange mileage, pending further consideration of the entire mileage schedule and of the readjustment of exchange boundary lines in the Boston metropolitan district.

MINNESOTA.

March 15: Conference between representatives of the railroad companies and telephone companies of the state for discussion of questions relating to telephone service in railroad depots, the classification of service, rates to be paid for telephone service and the installation of telephones in the office of station agents as a public necessity. This conference is the result of numerous inquiries and complaints from telephone companies relative to the question of telephone service in depots.

March 17: Hearing on application of the Osakis (Minn.) Telephone Co. for permission to increase the switching rate now charged the Leslie Rural Telephone Co. for 15 cents per station per month to 25 cents for such subscribers as can call Osakis direct; also to charge a rate of five cents per message originating with subscribers on the lines of the Leslie Rural company who cannot call Osakis direct, but who call through a switching point on the lines of the rural company. The petitioner states that the application is made for the purpose of making the switching charges to all rural companies uniform.

March 20: Hearing on petition of the City of Owatonna, Minn., for connection between the toll lines of the Tri-State Telephone & Telegraph Co. and the local exchange of the Northwestern Telephone Exchange Co. at Owatonna.

March 28: Hearing on application of the Northwestern Telephone Exchange Co. to increase its local exchange rates at Glenwood, Minn. In the application it is alleged that the company has recently reconstructed the outside plant and converted the exchange from a magneto to a common battery service and in order to secure a reasonable return on the investment, it is necessary to increase its local exchange rates.

NEBRASKA.

March: The commission authorized the Platte County Telephone Co. to take over the Bell company's exchange in Columbus, Neb., paying therefor $1,000 in cash and giving $14,000 in notes. To take care of this indebtedness the company is authorized to issue $15,000 of stock. The company is also given permission to increase its rates.

March 7: Complaint filed by James A. Axtell and other rural subscribers connected with the Fairbury exchange of the Lincoln Telephone & Telegraph Co. The complaint alleges that a solicitor obtained a number of contracts under a $1.50 rate through fraud and threat and asks that these contracts be declared null and void and that a $1.25 rate be put into effect.

NEW YORK.

March 13: Hearing on complaint of Hadden Brothers, of Milltown, near Brewster, against the New York Telephone Co. and George Jeungst & Sons, in regard to telephone and electric service.

OHIO.

March 13: The commission granted the petition of the Farmers & Merchants Telephone Co., of Paris, Ohio, and David R. Forgan, Edgar S. Bloom and Frank F. Fowle, receivers for the Central Union Telephone Co. for permission to enter into contracts with each other for the interchange of toll business. Order No. 782.

March 13: Postponed hearing on the protest of the Lima (Ohio) Telephone & Telegraph Co. against the tentative valuation of its property by the commission. This case was to have been heard February 28 but was postponed because of the inability to complete necessary investigation to permit of the resumption of the hearing.

March 14: The commission authorized the Amherst (Ohio) Home Telephone Co. to issue $30,000 common capital stock, $10,000 of which is to be used to reimburse its treasury for moneys expended from income during the years 1912-1915 for the construction of additions, extensions and improvements, to pay and discharge an indebtedness of $1,450, to provide additional extensions, additions and betterments of the total estimated cost of $8,550 and $10,000 to be issued to holders of a like amount of stock issued in October, 1911, the former issue be cancelled and destroyed. Order No. 757.

May 3: Postponed hearing on the protest of the Cleveland (Ohio) Telephone Co. against the tentative valuation of its property by the commission. This case was to have been heard March 9 but was postponed because of the disability of the director of law, Mr. Fitzgerald, of Cleveland.

OREGON.

April 17: Hearing of complaint asking for an interchange of telephone service between the Pacific Telephone & Telegraph Co. and the Home Telephone & Telegraph Co., of Portland, Ore.

WASHINGTON.

March 14: The Washington Public Service Commission resumed its hearing on the investigation of the Pacific Telephone & Telegraph Co.

WISCONSIN.

March 11: Hearing at Trego in the case of R. Peabody & Co. vs. the C., St. P., M. & O. Ry. Co. in regard to telephone in station. R—1979.

March 11: Hearing at Trego in the case of the Mills Mercantile Co. vs. the C., St. P., M. & O. Ry. Co. in regard to telephone in station. R—1980.

March 11: Hearing at Trego in the case of Thos. H. Fielding vs. the C., St. P., M. & O. Ry. Co. in regard to telephone in station. R—1983.

March 14: Hearing in the case of the Bangor Telephone Co. vs. the C., M. & St. P. Ry. Co. in regard to inductive interference. R—1964.

March 15: Hearing in re investigation on motion of the commission of the alleged refusal of the Dane County Telephone Co. to extend service to Levi Bookhout. U—894.

March 16: Hearing in re application of the Union Telephone Co. to extend service to Levi Bookhout. U—894.

March 20: Hearing at Fond du Lac in the case of the Rosendale Telephone Co. vs. the Wisconsin Telephone Co. in regard to rates and service. U—708.

March 24: Hearing in re application of the La Crosse Interurban Telephone Co. for authority to increase rates. U—902.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—Part I, Telephone Economics, by James H. Shoemaker, Completed June 26, 1915—Part II, The Corporate Telephone Organization, by J. C. Kelsey and S. R. Edwards, Completed September 25, 1915—Part III, Telephone Accounting and Auditing, by James H. Shoemaker, Completed January 15, 1916—Installments Now Being Presented Comprise Part IV, Telephone Finance, Written by J. C. Kelsey and S. R. Edwards

Quiz Questions on the Preceding Installment.

48. In the example given of a trust deed, what is set forth in the first two paragraphs?

49. Under what authority are the bonds to be issued in Michigan?

50. What are the principal features in the deed and the bond? Following the form of the bond, what other forms are given?

51. Under what authority do the directors and officers act in executing a mortgage and in issuing bonds?

52. What are the corporate and civil authorities for the execution of the mortgage?

53. What is the consideration given by the trustee to the telephone company?

54. What are "the recitals" of a trust mortgage? What do the granting clauses include?

55. State some of the particular covenants of the telephone company. What are other provisions of the mortgage?

CHAPTER V. Various Types of Bonds.

56. *Classification of Corporation Bonds.*—In the preceding chapter the long-time loan and the security back of it, upon which an issue of bonds is based, have been discussed. The following is a classification of corporation bonds, the name indicating the kind of security back of the bond: 1. First mortgage; 2. Second; 3. Third, even fourth and fifth; 4. Special; 5. General; 6. Sinking fund; 7. Collateral trust; 8. Debenture; 9. Income; 10. Participating; 11. Profit-sharing; 12. Joint; and 13. Receivers' certificates.

Bonds, however, seem to be in three general classes viz.: Mortgage, collateral trust, and debentures.

In the first class stand first, second, third, and even fourth and fifth mortgages, followed by a general mortgage.

57. *Mortgage Bonds.*—First mortgage bonds are first liens on certain definite physical property. In case of failure to pay principal and interest, the bondholders come into control of the property and the stockholders have no recourse but to move out of ownership and control.

Second mortgage bonds are liens on the property which come in for settlement after the first lien is satisfied. Third mortgage bonds are liens on what is left of the property after the first and second liens are satisfied. For the varying risks on the above mortgage bonds, the rate of interest usually takes account. First mortgage 5's, second mortgage 6's, and third mortgage 7's are usual.

58. *General and Refunding Mortgage Bonds.*—The general mortgage bonds are bonds secured by a mortgage on the property, usually subject to first mortgages. These general mortgage bonds may become a first mortgage after the prior liens have been paid.

A refunding mortgage bond is based upon a mortgage issue designed to take the place of one or more prior liens. The difference between a general and a refunding mortgage is that the first mentioned may take care of a refunding process but the latter does it specifically.

59. *The Sinking-Fund Bond.*—A sinking-fund bond is not popular except when a corporation's assets are hardly considered to be permanent, such as an oil well or mine. It is, therefore, not used in telephone financing. The sinking fund is of no benefit to a stockholder otherwise than to decrease the liabilities of the company.

A sinking fund must be invested in securities. It cannot be put into betterments and that is possibly why it does not help the stockholder—its limited earnings. If the money could be put back into the property, instead of some other property, it would be in the form of owned capital and earn a much higher rate than when invested at the low interest rate of other borrowed capital.

The ordinary method of providing for a sinking-fund bond issue, is to set aside a portion of the company's income, based upon the average debt involved.

60. *Collateral Trust Bonds.*—When it is impossible or inconvenient for a company to issue first mortgage bonds, the next method is to issue its own debenture bonds, secured by the deposits of stock and bonds of its subsidiary companies. Such a bond is called a collateral trust bond because the security it offers is covered by a deed of trust, just as a first mortgage bond is covered by a trust deed in case of real property.

In early days the government, to protect its advances to the Union Pacific Railroad, which were in the form of a second mortgage, passed a law which prohibited the railroad from increasing its bonded debt. Accordingly, the railroad was tied hand and foot. It could not extend nor could it build any of the branches so necessary to the early settlers. The Union Pacific therefore organized construction companies, advanced money out of its earnings, and in return took the stock and 7 per cent. first mortgage bonds of the construction company. To reimburse its treasury, the Union Pacific issued 6 per cent. bonds, and pledged the 7 per cent. first mortgage bonds of the branch line as security.

A collateral trust bond is inferior to the lien of a first mortgage, since a foreclosure of a collateral trust mortgage places the creditor in possession of more bonds. These are first mortgage bonds and possibly junior securities and necessitate additional foreclosure proceedings to get the property. It would seem that collateral trust bonds, secured by stock only, would be more dangerous because of being beneath so many prior issues.

In spite of the possibilities, collateral trust bonds are high-priced, even 4's selling at par are not unusual. The reason is something like the banking situation which encourages speculation in listed stocks, call loans being more convenient than long-time loans. Likewise, it is easier to sell listed securities than physical properties, in other words, one can sell a mortgage on his house quicker than he can sell the house.

It seems strange that a promise to pay is less valuable when based upon property than when based upon paper which depends upon the property. It is all a question of marketability. The custom has another particular value for it allows a company to buy or control another without paying out any money, or at least, little of it.

61. *Equipment Trust Bonds.*—Under the head of collateral trust bonds is another method of securing capital in spite of a closed first mortgage. It is largely used by the railroad companies to secure equipment and is known as a "car trust" certificate. The equipment does not belong to the railroad company at all until it is fully paid for. The manufacturer sells the equipment to an intermediary company, which in turn leases it to the railroad for a term of years. The railroad then pays the trustee, or the intermediary, the purchase price of the equipment in installments. The method may be illustrated as follows:

A syndicate headed by John Jones, is organized for the purpose of purchasing a large number of engines and cars. The syndicate then makes a leasing arrangement, whereby the railroad pays a certain sum in cash, say 20 per cent. of the purchase price. It further agrees to make equal payments for a term of years, keep the rolling stock in repair, replace it if ruined, and especially that if a receiver be appointed, he must pay the notes rather than lose the rolling stock. John Jones then assigns the agreement with the railroad to a trust company and the certificates are sold to the public.

Equipment trust notes have one great advantage in their favor: No receiver has been known to default on the equipment issue. The courts have held that rolling stock equipment is a sacred thing and so far, no one has dared to contest.

This method has been advocated and used in telephone practice, new switchboard equipment being purchased on this installment basis and paid for by equipment trust notes. Particular care must be exercised if the original mortgage of the company has a clause which covers all "after acquired property." In that case, a straight mortgage on equipment would hardly be a first lien upon the equipment.

62. *Debenture Bonds.*—A debenture bond is a certificate of debt issued by a corporation without mortgage or collateral security. It is merely an unsecured promissory note running for a number of years and, in case of insolvency, joins the class of the general floating debt.

Debentures have just a little advantage over preferred stock as they have a claim which can be enforced by law. The value of debenture bonds naturally depends upon the surplus earnings of the property. They are merely in the junior security class and for that reason bear a higher rate of interest. Debentures are issued principally in reorganization times, when the security holders are more or less helpless. Usually the junior mortgages are replaced by this debenture issue.

In New England debentures are popular. The Boston & Maine Railroad has four mortgage issues and seven debenture issues. The New Haven road had six issues of debentures. Railroads are generally adopting the plan of replacing maturing issues by debentures. Utility concerns cannot make use of debentures for the simple reason that regulation has cut down surplus earnings to the danger line of actual security.

63. *Income Bonds.*—Income bonds differ slightly from debenture bonds. They are inferior to preferred stock with cumulative clauses and superior to it so far as the principal being paid first is concerned. Income bonds never reached the voting privilege while preferred stock often achieves a vote after one or two defaults. Income bonds give the holder no security whatever, and ofttimes a series of lawsuits over net earnings. The question of net earnings is ever a red flag of dispute.

Income bonds usually come under a lien which gives right of foreclosure on failure to pay principal, but have nothing to say on default of interest. Any security which gives no control nor any cumulative interest privileges, does not look inviting. An issue of income bonds is a child of reorganization in which banks, trust companies' widows, and all, are anxious to take anything from the financial wreck of their early hopes.

(To be Continued.)

Tribute to the Deceased Andrew Denholm.

At a meeting of the executive committee of the Canadian Independent Telephone Association, held March 8 in Toronto, Ont., the following resolution was passed:

"That the officers and executive committee of the Canadian Independent Telephone Association upon this first occasion of their meeting together since the lamentable death of the association's president, the late Andrew Denholm, take the earliest opportunity of recording their profound sense of the loss occasioned by all interested in the welfare of Independent telephony by the removal of so able and zealous a co-worker from their midst, and in extending their deepest sympathy to the family and desire to express their appreciation and gratitude for the staunch support and valuable service rendered to the association during the years he was identified with its work."

Annual Meeting of Hector (N. Y.) Mutual Company.

The annual meeting of the Hector, Logan & Burdett Telephone Co. was held recently, and the following officers were re-elected for the ensuing year: E. Erway, Hector, president; George W. Rowe, Valois, vice-president; W. B. Huston, Hector, secretary, and F. Lowe, Hector, treasurer. W. R. Johnson, Valois, was elected director. L. W. Longstreet, Valois, and W. Creighton, Burdett, are also members of the board of directors.

This is a small incorporated farmers' mutual company, having 100 stockholders and about 20 subscribers who are not stockholders. It has been very successful, the reports showing a net surplus of about $950.

At the annual meeting it was decided to purchase a new switchboard and improve the outside plant.

Practical Subjects—Letters and Discussions

"Telephony's" Home Course for Telephone Men.

(Not meant for study)

By Well Clay.

SIXTH SCENE.

A rag of a cloud,
Wind-wrenched from the shroud
Which hid the first sunbeams from view.
Took a course all its own
'Til at last, all alone,
It sailed away through the blue.

We felt rather lonely, when we came to look about us in the operating field—and found out that so far as the question of raising rates was concerned, we were all alone, being the only company, I believe, that actually raised that year in Minnesota. All our neighbors in the telephone business looked longingly at the "patch" but concluded, probably, that they did not care for any of the "melon" for fear that the "bull dog" of public opinion was not altogether just a part of the scenery but might take it into its head to entertain desires not entirely disassociated from damage to their corporate persons.

We knew that the companies all around us were "only charging a dollar a month and making money at it" because quite a number of our patrons told us so. They told us a number of other things which we took under advisement at the time but refrained from acting on because they seemed so personal. We were about as popular as a skunk in a hen house. It did seem that the patrons for whom we had done the most in the past went out of their way the farthest to give us a dig.

The rural patrons who had been getting free service with two or more towns, by reason of the fact that they lived where the territory divided between the two communities, were the most pronounced in their bitterness, although, mind you, we had not taken this privilege away from them when we raised from a dollar to a dollar and a quarter a month. The patrons made a good deal of noise but still we did find in many localities that, when traced out to its final source, most of it came from one or more patrons—like the million frogs in the pond which the man investigated and found that only one was making all the noise.

The date approached on which we were to take the action advertised. We prepared for it by hiring several teams, which were each to patrol certain lines on the first day and remove such telephones as had been ordered out. We had decided that "stick" we would, and that we might as well bust then as later, if we had to fail at all. These teams made the rounds and in most cases got a load—some had to go back for a second load.

The idea that the patron would suddenly back down, when he beheld his beloved telephone being rudely yanked off the wall and fall on our neck imploringly in an endeavor to stay our drastic action by coming to terms, may be all right in theory but don't get fooled by it. Once I was told that hornets would never sting a person if that person was to walk right up to their nests without any traces of fear.

I tried it one fine summer day. While I can't say for sure whether I exhibited any traces of fear, when I went up to interview them as they were engaged in their humble tasks, I am more than positive that in about three-eights of a split second, immediately following, I exhibited traces of speed in an opposite direction that would make a modern flying machine seem pretty slow.

In many cases the telephones were ordered left in, "because the wife wanted it"; sometimes because "the children have agreed to pay for it" or some such excuse, but never because father had any use for it. Not on your life! Father hardly ever uses the telephone anyhow and when he does, it is only on a matter of business, and it never takes him over a minute. I know this is so because so many of them have told me so.

We took out telephones day after day, finally with only one rig, until I had so many that I had to store them in an empty store building where they would not be seen by anyone—more especially by the "directors" for fear the sight might act adversely on their nerves.

We had one unvarying rule laid down from the first: That in no case would there be any argument put up by the linemen—that they should merely inquire in a straightforward business manner whether the patron desired the instrument removed at that time or not, and to be just as pleasant when the removal was ordered as when it was an order to let it remain at the new price.

Now here is a little ray of light for you, who are about to make a raise of rates. The patrons within the city limits, while they were quite active in advising the farmer to order out his telephone, "as a lesson to the company," were some way or another, not very much addicted to the habit of doing likewise, and we lost very few telephones in town. It reminds me of the cheerful way in which an old schoolmate of mine used to be very officious in telling us boys just where and how to get over the fence and get the apples without rousing the attention of the dog. But he never volunteered to incite action by example—on account of moral reasons, probably.

These telephones which we "took out" were each labeled with a slip of paper to indicate from whence it was taken, so that, in case we got a chance to put it back, the patron would know that it was sanitary and otherwise worthy of being reinstalled. Some of them were out only one day and some one or two never did put them back. Most of them were out anywhere from thee weeks to three months.

Now I am going to tell you just what we lost in revenues from making the change—in dollars and cents. Later I will tell you what we gained, not only in dollars and cents, but otherwise:

The month of February preceding the first of March on which we made the raise, our gross earnings were $711.27 and the month following, they were only $551.10. The year previous to the raise we had earned in gross, $8,449.93. The year of the raise we earned only $7,951.37. While between February and March we dropped down $182.87, yet for the year we were only $498.56 in the hole financially. This is not so much of a "war debt" when one considers the achievements in that line in Europe nowadays.

The year following the raise, we earned $8,578.94, or just a beginning to crawling ahead again to the tune of $129.01 over the year previous to the awakening. In other words, from a revenue standpoint it had cost us in two years to readjust and go ahead, about $369.55. In the second year following, we earned $636.81 more than we had ever earned in any year before; and this with a fewer number of telephones to look after than prior to the raise, for some of those who took them out, "hung out" a long time after they saw that it would have no moral effect on their neighbors. I presume it is human nature to be a little obstinate at times. Perhaps, however, it was not so much obstinacy as it was embarrassment which made them wait so long before coming back into the fold.

In next week's paper, I will try and tell you the many ways in which both the company and the plant were better off for passing through the fiery furnace.

(*To be Continued.*)

QUIZ QUESTIONS FOR REFLECTION.

What is the difference between being firm and being a bullhead?

If you got a reputation for bravery when you were too scared to run, would you let on about the facts afterwards?

Why is a telephone service "sponger" never satisfied with the service?

Do you attend dog fights because you are interested in dogs, or just because it's a fight and you cannot help yourself?

Is a rate fight a fight over rates, or is it just the out-cropping of the human instinct to guard against a real or fancied foe?

We all know we feel better after a bath—still we hate to take one if the temperature is a little low. Same way about a raise in rates. The water is fine—afterwards.

Commission Regulation of Telephone Properties.

By the Interrogator.

In his excellent paper on regulation, Judge Chas. H. Prouty, head of the valuation division of the Interstate Commerce Commission, says the objects are to provide the best possible service at the best possible rates. I have been interested in the contention set forth in one or two of the earlier articles in TELEPHONY—the contention that if there is a telephone company that tries to give the best possible service at the best possible price, it is entitled to be treated as favorably as any other owner whose property is being valued or regulated for public use.

Shouldn't telephone owners everywhere press this matter upon the public conscience?

Why should the Interstate Commerce Commission's valuation of property or regulation of rates be less favorable to telephone owners than the Federal Reserve Board's treatment ot banks or the Federal Trade Commission's treatment of other lines of business?

If the owners of common carrier properties will keep such questions as these constantly before the public, will they not be more apt to get the effectual sympathy of all who are engaged in other lines of business?

An editorial in the Saturday Evening Post of March 11, 1915, entitled "Government by Commission," says:

> The Interstate Commerce Commission exercises a large measure of control over railroads. The Federal Reserve Board has wide discretionary powers in the banking field. The Federal Trade Commission, though it has not yet found and shaped itself, is empowered to intervene pretty extensively in manufacturing and trade. The new shipping bill proposes a board authorized to build or buy ships with public money—then to lease, sell or operate the vessels in its discretion; also, to fix freight rates for American vessels.
>
> The proposed Tariff Commission will begin, at least, by being advisory only; but if it does what is expected it must have considerable influence on American affairs through its recommendations as to rates of duty on imports. There is a bill for a Waterway Commission—to be advisory only, like the Tariff Commission, yet to supervise the whole scheme of inland waterway improvements. We seem to be moving rather decisively toward extensive government by commissions, some of which, at least, will combine to some extent legislative, executive and judicial powers.
>
> This may be our way of getting government efficiency. Certainly the tendency need not go a great deal farther than is now proposed in order to bring about a situation in which a set of commissions will be exerting a greater actual influence upon American affairs than Congress or the President or the court exercises—when the ordinary citizen, in looking to Washington for action that is going to touch him personally, will look, not to any of the three constitutional branches but to a certain commission.
>
> Nominally, at least, the commissions are non-partisan. Theoretically, at least, they are expert and disinterested. This may finally be our way of getting government efficiency. At any rate, it may be worth trying.

At the meeting of the Traffic Club in Hotel La Salle, Chicago, March 1, 1915, Pierce Butler, chairman of the legal department of the Railway Presidents' Conference Committee on Valuation, said:

> It is difficult to think of a calamity greater than that which is certain to follow a valuation (for public use) based on the theory that the federal constitution does not protect the full present value of common carrier property in rate legislation. . . .
>
> Whether for good or ill, the tendency is clearly in the direction of subjecting property, which is employed in trade, manufacture, insurance, banking, and many other lines of business, to regulation similar in kind to that now applying to the numerous classes of public utilities.
>
> It is interesting to consider what businesses may be held to be public, in the sense that they are subject to the price-fixing power.
>
> It has been decided by the highest court that a public interest may exist in a business, as distinguished from a public use of the property; that such public interest can be the basis of the rate-fixing or price-fixing power; that the business is the fundamental thing and that the property is but the instrument of the business; and, that,
>
> A business, by its circumstances may rise from private to public concern, and consequently become subject to price (or rate) regulation.

Isn't this the kind of information that telephone men should have? Isn't it the thing they should use in defense of their business?

A Novel Use for the Telephone.

A unique and most practical use of the telephone has been made by Bart Tourison, a Philadelphia architect. As shown in the accompanying illustration which is reproduced through the courtesy of The Telephone News, a telephone is installed in the ante-room of his office to take the place of the usual office boy.

By means of this scheme Mr. Tourison is enabled to concentrate upon his work, as the usual canvassers, drummers and others—with no very important business—who hang around office buildings and worry the business man with their constant importunities, in most cases steer clear of the "telephone office boy." When they pick up the receiver and find that Mr. Tourison himself answers promptly and quizzically with "This is Mr. Tourison," the wind is at once taken out of their sails.

The "Telephone Office Boy."

No person is obliged to cool his heels in Mr. Tourison's ante-room; he either gets a prompt answer to the question he puts, or is asked to return at a more opportune moment. Then, of course, when Mr. Tourison is engaged with a client, there is none of the disturbance from the office boy running in to present a card or tell him that someone is waiting.

From Factory and Salesroom

Conventions: Texas, Fort Worth, March 16-18; Oklahoma, Oklahoma City, March 24-25; Nebraska, Lincoln, March 28-29: North Dakota, New Rockford, March 28-29; Eastern Pennsylvania, Lancaster, April 13-14; Southern States, Knoxville, Tenn., May 23-24

Selling Direct and Marketing Through Jobbers.

A great deal of discussion and comment, favorable and otherwise, has been aroused among central station companies and telephone companies concerning the policy of the Oshkosh Mfg. Co. in marketing its entire product through the legitimate electrical jobber.

Up to about two years ago the Oshkosh Mfg. Co. sold its product to both the jobber and the consumer—with plenty of accent on the latter. Many features developed which were unsatisfactory both to the consumer and to the Oshkosh company, and the latter felt that some remedy was imperative.

"It was out of the question," said Mr. J. W. Wooley, sales manager of the Oshkosh company, who was asked to make an explanation of the sales policy, "to attempt to raise prices to the consumer to care for the crying need for 'service,' and as a result we had to devise a better method.

"To convince the consumer that we are familiar with both sides of this discussion, I want to say that we made a thorough and detailed study of the question. Among other things we found that the average amount of an order from an operating company was only a small fraction of the amount of an order from a jobber, but that the cost of filling each order was the same. While a little time could be saved in assembling the smaller amount of tools listed on an order from an operating company, the saving was lost in the increased ratio of cost of special packing cases, etc.

A large percentage of these orders came to us from operating companies that did not have a copy of our catalogue, and therefore did not have our catalogue number available. This necessitated further correspondence to ascertain just what the company required and therefore long delays in shipment.

Orders for only 80 to 90 pounds of tools came to us from companies 2,000 miles distant from our factory. This meant an immense freight item in view of the fact that the weight of these small orders would not even come close to making up the weight allowed under the minimum freight charge. Investigation of several hundred orders showed that an average of 12 per cent. on the total cost of the tools could have been saved by the consumer had he been able to specify enough tools to make up the minimum required by the transportation companies.

On these orders, the matter of 'delivery' time was ascertained, and it was found that the average time from date of shipment to delivery was nine days, an item of considerable expense to the operating company in 'delay.'

We were, as a rule, so far away from the operating company that no accurate credit rating could be obtained. We, of course, used standard rating books, but we found them ofttimes unable to do justice to either the operating company or to us, in view of the fact that the ratings shown were frequently those made a year previous. Many times no rating was shown. Special reports were out of the question for two reasons:

First, the small amount involved would not warrant the expenses; and second, the delay while securing this report. As a result of our not being able to handle these 'credits' satisfactorily, a considerable amount was annually charged off to profit and loss. A large percentage of this undoubtedly could have been recovered by suit, but here again the small individual amount involved precluded the possibility of such action.

After all was said and done, the one great underlying objection to selling or marketing tools direct, was the lack of 'service.'

A large percentage of tool requirements are for emergency work and in any event, owing to the relatively small amount of tools used in comparison to such other items as poles, pole line hardware, etc., less consideration is given this matter by the storekeeper than on items of which large amounts are required. As a result tool requirements are not specified until the supply is exhausted and 'service' is imperative.

For these reasons the desired 'service' cannot be obtained from the average manufacturer."

"What about the economic side of this problem?" Mr. Wooley was asked.

"Our experience in the last two years," he replied, "has been that we can sell tools to the jobber, who will maintain a large and representative stock and arrange a fair profit for him and still deliver the tools to the operating company at lower prices than we would have to charge if we sold them direct. By selling the jobber, our line is exploited by all his traveling salesmen at a small fraction of what it would cost us to do the same work. It is self evident that the selling cost, whatever it is, must be paid for by the consumer.

"The jobber's salesman will call at least four times to the manufacturer's once. Being in close personal touch with the consumer, the jobber's salesman has many friendships among the trade. He knows when to sell and when not to sell, and for him to solicit an order for his jobbing house is in many cases equivalent to securing it. He has made a close and careful study of his particular territory. It being local in scope, he is enabled to save time and money that the manufacturer could never hope to. He has not only one line to sell, but probably hundreds of others and his selling cost is so prorated among these lines that, as a result, he is enabled to call on his trade oftener and sell more and at a far less expense than had he the one line to exploit.

Now, why can we arrange our prices to the jobber so that he can sell the goods to the consumer cheaper than we can sell them to him direct, to say nothing of the saving on the shorter less than carload freight haul? Let us summarize:

First, our selling expense outside of advertising is practically nothing.

Second, the jobber can and does pack tools for shipment along with many other items of which the manufacturer has never even heard. The packing and shipping charge is divided between several items and the item of tools is only a small proportion of the whole.

Third, we have no credit losses.

These three items about cover the economic side of this proposition. Call the jobber a necessary evil, if you wish, but the fact still remains that we could not market our tools to the ultimate consumer were it not for this very same jobber who minimizes our selling costs and takes all our credit risks.

When we make this statement, we recall to mind the

The Latest In Automatics

Every Telephone Man knows—

That RELAYS when properly designed and manufactured give little or no trouble and are doing their work in all parts of the world and all conditions of climate.

Mr. Jay G. Mitchell Knows —and says (*Telephony*, Jan. 8, 1916)

"It may be truthfully said that the standard type of direct current relay is without doubt an essential and indispensable element in modern common battery switchboard equipment. It is important to note the wide limits over which the satisfactory operation of any one of the standard types of relay extends. In other words, it is remarkable how far the operating currents may vary from their normal or average strength and still afford the most satisfactory results in the operation of the relay."

We Know—

That our RELAYS will operate with large variations of voltage and a wide range of dial speed.

Our System Will Give You Every Class of Automatic Telephone Service by the use of

Relays Only

WITH

Reliable Service

AND

Low Maintenance Cost

The Relay Automatic Telephone Co., Ltd.

In Care of **Marconi Wireless Telegraph Co. of America**

Woolworth Bldg., NEW YORK

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

case of a prominent electrical manufacturing concern which was organized to manufacture a certain line of switches and electrical specialties which is now sold extensively through the jobbers.

At the outset this electrical concern felt it could, by eliminating the jobber, more advantageously market its goods to the user. The officers failed to see how the jobber, who neither made the goods nor used them, had a right to exist on the products of others. Just about the time that factory began to sell its product direct to the consumer, they found, to their great dismay, that their marketing conclusion had been wrong.

After interviewing several jobbers on the subject, they learned the several facts which have since made this same concern a power in the electrical world. For instance, they found that the jobbers were in business to sell goods; that the jobbers made no goods whatever; did not know how to made goods, nor did they want to know; that they devoted their entire energies to the sale of merchandise.

They found that the jobber had made a study of and had built up an organization based on many years of experience; that the concern which devoted its time to minimizing the troubles and expense of selling goods, had not time to cope with the problems incidental to their manufacture, and that the factory which succeeded in manufacturing an article successfully and economically, has solved all the difficulties it should be troubled with, and that it is more profitable to leave the marketing of that article to concerns which know how to market it better than the manufacturer ever will.

The company referred to learned that, by marketing its product through the jobber, it would not cost it one penny for anything it did not sell and that it would cost it only a very small percentage of the price on what was sold. Had that company properly considered in the beginning what it was going to cost it to market its product direct—as it had contemplated—the officers would have known that they would need an army of salesmen which would cost them in salaries, alone, an amount that would be appalling, to say nothing of other incidental expenses, all of which would have to come out of the sales of their one line alone. And not only that, the expense would be on what they did not sell as well as on what they did sell.

All these things were learned by bitter experience and they have so revised their selling methods as to eliminate all of these troublesome items and turn the practical end of the marketing of their product over to highly trained and expert sales organizations maintained by the legitimate electrical jobber. In this way they have been enabled to dispose of their product to the ultimate consumer at a far less price than had they continued their original method of selling direct.

We do not know of a better illustration of the fact that the middleman or jobber is an economic necessity, especially in the electrical supply business.

But putting aside all questions of an economic nature and getting down to the fundamental reason for the jobber's existence, we come back to the one word 'service.' The jobber combs the country for standard electrical merchandise, buys it in the right market and maintains immense stocks in his warehouses for immediate shipment to his customers. He can, as a rule, deliver material to them in an average time of two days. That's what counts in these 'high pressure' days."

S-R Private Service Installations.

The S-R Electric Co., of Chicago, has just completed the installation of 15 S-R private service attachments on a 16-party line for the Hillsboro Telephone Co., of Hillsboro, Wis. This makes that party line entirely private service, also giving it selective ringing either way on the line and many other valuable features of the S-R system.

Both the owner, E. V. Wernick, and Manager Quinn are progressive hustlers in the telephone field and are interested in and anxious to install anything that makes for better service.

The Farmers' Mutual Telephone Co. at Baraboo, will have three-party lines equipped with S-R private service attachments, and the telephone companies at Elroy, Reedsburg, Bangor and Wonewoc will all receive the equipment in order.

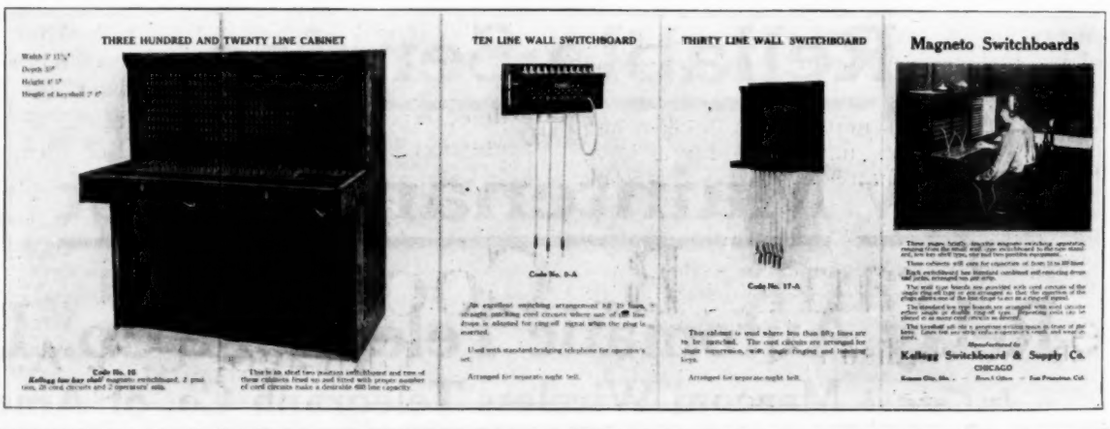
A party line of the People's Mutual Telephone Co. of Hillsboro, Ill., at the town of Irving, was made private service by equipping it with S-R private service attachments early in January and is said to have been in constant service since with the very best results.

A recent letter from the Monon & Francesville Telephone Co. for which the S-R Electric Co. installed its private service attachments, states: "The S-R telephones work fine and the subscribers are well pleased."

These and many other installations standing the collar and elbow banging of actual service prove the S-R private service system for rural party lines, both grounded and metallic, does all that its manufacturer claims.

Kellogg Low Keyshelf Switchboard Equipment.

An attractive little folder which briefly describes the Kellogg low keyshelf, magneto switchboard in capacities from 10 to 320-line cabinets, has just been issued by the Kellogg Switchboard & Supply Co., of Chicago. This little folder tells at a glance the more important advantages of



Reproduction from Kellogg Folder on Low Keyshelf Magneto Switchboards.

Cook's Protective News

Vol. I, No. 1 ***In the Interests of Adequate Telephone Protection*** **March 18, 1916**

Purpose—To Get Acquainted

We hope you will read every issue of this new series of advertisements because we want them to make us better acquainted.

Many do not realize that the House of Cook has been in existence since the very beginning of Independent Telephony. As the Independent movement has gathered momentum, we have grown too, until now it would be difficult indeed to find an Independent instrument that did not have a connection of some sort with at least one of the many devices manufactured in the Cook plant. Thus closely are Cook products affiliated with Independent Telephony.

But with us, as with the Independent movement, size and age have not meant stagnation. New blood has been infused into our organization, bringing new ideas, new and better ways of doing things. Cook products, always honestly made, have been refined and improved and new devices added, until now the Cook line of telephone protecting apparatus stands without an equal, either for quality or completeness.

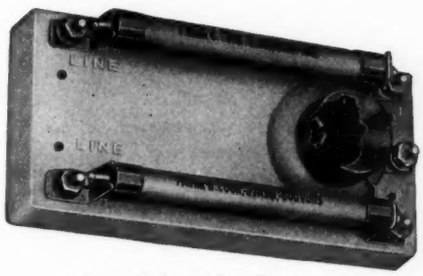
Somewhere in the Cook line there is sure to be the very piece of protective equipment you need. And whatever it may be, you can rest assured that it will be the very best product our highly efficient organization knows how to turn out.

Coming—The New Cook Catalogue

The new Cook Catalogue is in active state of preparation. Cook's Brown Book has long been the telephone man's guide on protective supplies, and the new book, with its added features, will be even more complete and up-to-date.

To make sure of getting the book when issued, send us your name and address now. Every telephone man should have this book because of the vital information it will contain on telephone protection.

Here Are Two Well-Known Cook Products



B-7—Sub-station Protector

A neat, durable and serviceable sub-station or house protector. Thousands are in use—have been for years. Write for full description and prices.

Cook's Self-Welding Wire Sleeves

Stronger than the wire itself. They eliminate moisture and insure perfect conductivity. Unusually low prices on this article. Write for quotations.

Put Your Protective Problems Up to Cook. Write To-day

Telephone protection is a science in itself. Get expert advice on your problems from the big Cook organization, who have specialized for years in questions of telephone protection. Write them today. Let them help solve your problems.

Frank B. Cook Co.

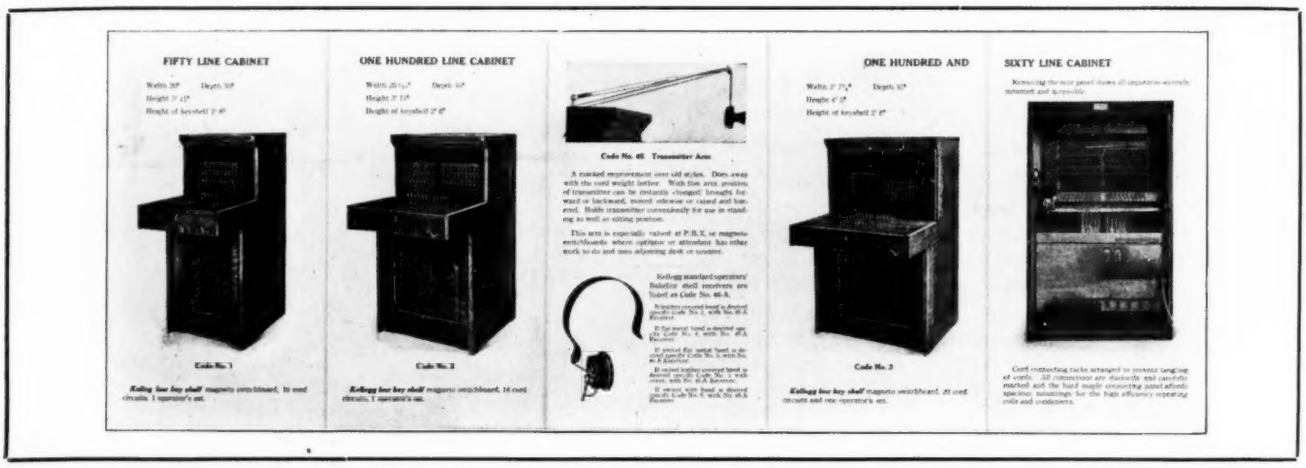
326 W. Madison St. **Chicago, U. S. A.**

this type of equipment, as is evidenced by the accompanying illustrations.

The Kellogg low keyshelf, magneto switchboards match in height of keyshelf, ordinary office desks and tables. Ordinary office chairs are used, and all of these equipments are of great general utility. They are especially convenient where the operator, as is often the case in smaller institutions, takes care of other office work.

The arrangement of the apparatus in these boards is one of the many exceedingly practical features. The new Kellogg transmitter arm and Kellogg Bakelite operators' receivers and head bands are also featured in the folder. The Kellogg transmitter arm holds the transmitter conveniently, and is a great improvement over old styles.

Telephone companies contemplating the installation of new switchboard equipment this spring will be interested in this little folder, which will be sent upon request.



Another Reproduction from Folder Showing Special Features of Kellogg Low Keyshelf Magneto Switchboards.

Parker Steel Screws for Sheet-Metal Work.

Telephone companies use a great many wood screws for various purposes. The Parker steel sheet-metal screw is a steel screw especially designed for sheet-metal work, which is of interest to telephone men. The thread extends over the entire length of the screw, so that the metal may be drawn up flush with its head. The screw cuts into the metal like a tap without stripping or in any way injuring its thread. It is contended that the Parker steel screw is unequalled for fastening anything and everything to metal. And once it is screwed in place, it is said, it remains in—nothing can jar it loose. This is because the screw is tapered only at the point and continued straight from the point upward.

The Parker Supply Co., 517-23 West 45th street, New York, manufacturer of Parker screws, is prepared to furnish them in the following sizes; 3/8 in. No. 6, 1/8 in. by 1/2 in., 3/16 in. by 3/4 in., 3/16 by 1 1/4 in., 3/16 by 1 1/2 in., 1/4 in. by 7/8 in., 1/4 in. by 1 1/4 in., and 1/4 in. by 1 1/2 in. Steel screws for special requirements will be furnished to order. Further information and descriptive literature may be obtained upon application.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

GEORGE ANNAN has resigned his position as manager of the Carroll County Independent Telephone Co., of Savannah, Ill.

A. E. KRAKER, of Melrose, Minn., has purchased from William Balder his interests in the Melrose Telephone Exchange, becoming sole owner.

G. M. WELCH, commercial superintendent of the Michigan State Telephone Co., for several years, has succeeded A. vonSchlegell as general manager of that company.

ROBERT D. FULLER of the commercial department at the Worcester (Mass.) exchange of the New England Telephone & Telegraph Co. has been appointed manager of the exchange at Great Barrington, Mass.

B. M. DUNN, manager of the Farmers & Citizens Mutual Telephone Co., at Springfield, Minn., for the past nine years, has resigned to accept a position as district manager of Tri-State Telephone & Telegraph Co., of St. Paul, for Southwestern Minnesota. He will continue to make Springfield his headquarters.

LIEUTENANT-COLONEL T. R. MAYBERRY, of the Ingersoll Telephone Co., Ingersoll, Ontario, and ex-member of parliament for South Oxford, was elected president of the Canadian Independent Telephone Association, at a recent meeting of the executive committee, to fill the vacancy caused by the death of President Andrew Denholm.

J. W. TESKE, of Brooklyn, N. Y., has been appointed commercial manager of the New York Telephone Co., at Jamaica, N. Y., succeeding B. B. Andrews, who died recently. Mr. Teske has been with the New York Telephone Co. since 1905, having been manager of the exchange at Hempstead, Long Island, at Far Rockaway and in the main Brooklyn office on assignments.

A. VONSCHLEGELL, for several years general manager of the Michigan State Telephone Co., has resigned that position and been made vice-president of that company. He will hereafter be actively engaged in the executive and managerial work of the Hupp Motor Car Corporation of which he has also become vice-president. Mr. vonSchlegell has for the past 21 years been active with the Bell system in the Northwest, Chicago, and as general manager of the Michigan State Telephone Co.

C. C. NELSON, of New Sweden, Minn., was elected general manager of the Nicollet County Telephone Co., at a recent meeting of the directors at St. Peter. Mr. Nelson was one of the organizers of the company and its former manager. When the Nicollet County company was consolidated with the St. Peter Telephone Co. he was elected a member of the board of directors and has since been retained in that capacity. Mr. Carpenter, the former manager, is still connected with the company but will retire from active participation in the future.

Obituary.

CHARLES F. YOUNG, president of the Citizens Telephone Co., of Grand Rapids, Mich., died recently in Chicago, at the

TRADE MARK OSHKOSH

ON THE HANDLE MEANS QUALITY IN THE TOOL

You can buy for almost any price you want to pay

But you do not get the most economical tools at the cheapest price

New Pattern Post Hole Spoon.

You want shovels with long life blades and handles that will stand unusual strains; spoons that are hard enough to last for years; slicks, digging bars and tamps that have just the right "balance," so they do not tire the men.

All these points have been built into OSHKOSH tools. Long years of experience enables us to produce the most economical digging devices; ask your jobber for prices and literature. But insist on OSHKOSH.

OSHKOSH MANUFACTURING COMPANY

OSHKOSH, WIS.

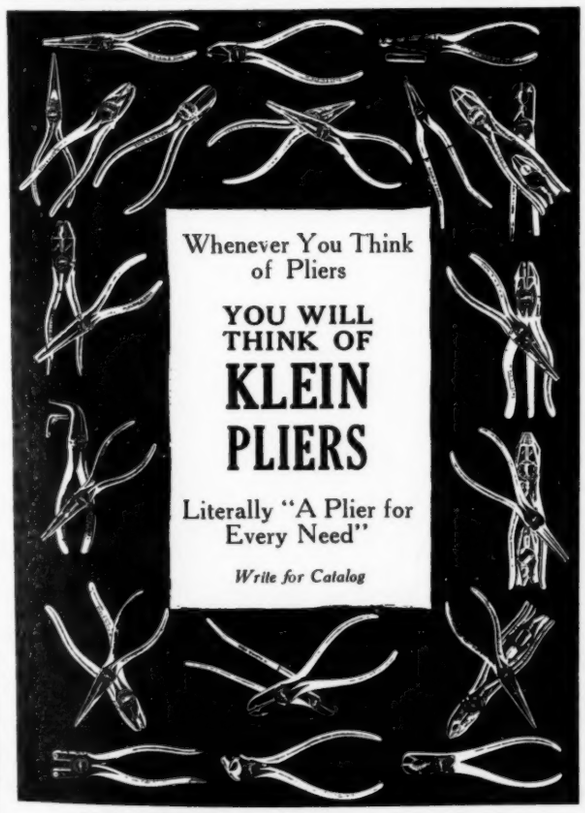
NEW YORK
Northwestern Electric Equipment Company

PITTSBURGH
Union Electric Company

PHILADELPHIA
L. K. Simons Electric Company

SAN FRANCISCO
H. B. Squires Company

Electric Speed Combination Digging and Tamping Bar.



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CHICAGO

age of 70 years. Mr. Young was on his way from Florida to attend a meeting of the directors of the Citizens company. Mr. Young was also president of the Alpena Gas Co. and president of the Tanners' Supply Co.

New Companies and Incorporations.

ALTONA, ILL.—The Altona Farmers Telephone Co. has been incorporated with a capital stock of $2,500. The incorporators are D. N. McMaster, Gust Bjorling, A. A. Hager, C. A. Ebstedt, S. B. Brown and J. W. McQueen.

BLUE MOUND, ILL.—The Blue Mound Telephone Co. has been incorporated with a capital stock of $20,000. The incorporators are Albert W. McClure, A. J. McClure and James A. McClure. McClure.

EATON, ILL.—The Porterville Telephone Co. has been incorporated with a capital stock of $2,350. The incorporators are E. C. Kendall, E. A. Lingafelter and O. H. Smith.

CLOVERDALE, IND.—Cloverdale Telephone Co. was incorporated recently with a capital stock of $5,000. The incorporators are Robert L. Job, Arthur Miles, William P. Furr and Jesse E. McCoy.

KIRKPATRICK, IND.—The Kirkpatrick Telephone Co. was incorporated recently with a capital stock of $2,000. The directors are Perry Davis, Simon Welsheimer, Josiah P. Halstead, William F. Morin and Samuel Barnett.

MUSCATINE, IOWA.—Articles of incorporation for the Center Grove Telephone Co. were filed recently, the incorporators being Henry Nitz, John Faustian, Fred Buckwoldt, Charles Buckwoldt and William Untiedt.

HAZEL GREEN, KY.—The Red River-Gillmore Telephone Co. has been incorporated with $150 capital. The incorporators are L. E. Smith, J. L. Fallen and A. J. Lindon.

ALMONT, MICH.—The Almont Telephone Co. was incorporated recently with a capital stock of $15,000. The incorporators are W. F. Hammond, B. B. Hammond and A. A. Hammond.

COTTONWOOD, OKLA.—A state charter has been granted to the Cottonwood Telephone Co. The capital stock is placed at $200. The incorporators are J. W. Peoples, J. A. Brintle, H. T. Wanzor, J. W. Griffin and John Riggins, all of Mountain View.

WESTPORT, S. D.—The Westport-Oneota Telephone Co. was incorporated recently with a capital stock of $5,000. The incorporators are J. C. Sieman, T. J. McBride and R. L. Gernon.

ALTO, TEXAS.—The Alto Telephone Co. was incorporated recently with a capital stock of $1,800. The incorporators are W. H. Shooks, C. H. Fitts and J. A. Fitts.

LANGES MILLS, TEXAS.—The Langes Mills Telephone Co. was incorporated recently with a capital stock of $2,000. The incorporators are: Louis Welge, Alfred Sauer and E. J. Ahrens.

ANTIGO, WIS.—The Eau Claire River Telephone Co. was organized recently with 22 subscribers. The following officers were elected at the meeting: President, Calvin Balliet; vice-president, Charles Schoette; secretary, Joseph Wild; treasurer, Engelbert Stuiber; trustees, George Hunt, Fred Goeman, G. F. Gratz.

BABCOCK, WIS.—Babcock citizens have organized a new telephone company and placed the capital stock at $5,000. The incorporators are J. R. Bowden, Anton Brost and R. E. Lubbers. A new telephone company was also formed in the town of Port Edwards, Wis., to be known as the Lynn Creek Telephone Co., and at present will serve about forty farmers.

MERRILL, WIS.—At a meeting held recently the Lincoln Telephone Co. was organized. The following officers were elected to head the new company for the coming year: President, Ernest Kruse; secretary, A. F. Golen; treasurer, A. Fiedler; directors, Richard Kuehn, Frank Weiand, Henry Kruse and Herman Kruse.

SAXON, WIS.—The Saxon Telephone Co. was incorporated recently with a capital stock of $3,000.

Financial.

DOWAGIAC, MICH.—The Cass County Telephone & Telegraph Co. has increased its capital stock from $25,000 to $35,000.

Elections.

TAMPA, FLA.—The annual meeting of stockholders and election of officers of the Peninsular Telephone Co. was held recently. All of the old officers and directors were re-elected, as follows: W. G. Brorein, president and general manager; S. A. Hoskins, of Columbus, O., vice-president; DeForest Hicks, of New York, treasurer; R. H. Goeke, secretary. The officers and H. Hause, of Wapokoneta, O.; O. E. Dunan, St. Mary's, O., and Earl L. Peters, Toledo, O., constitute the board of directors.

RICHMOND, IND.—Officers and directors of the Home Telephone Co. re-elected for the ensuing year at a recent meeting are: John M. Lontz, president; E. H. Cates, vice-president; L. F. Browne, secretary and treasurer; P. J. Freeman, attorney, and William M. Bailey, general manager. The directors are the foregoing officers and S. W. Gaar, E. G. Hibberd, P. W. Smith, A. C. Lindemuth, all of Richmond; H. C. Starr, of Indianapolis; L. M. Flesh, S. K. Statler, W. A. Snyder and J. L. Boyer, all of Piqua, Ohio.

MANKATO, KAN.—Stockholders of the Jewell County Mutual Telephone Co. held their annual meeting and election recently. Carl Cederberg was elected president; L. H. Cauthorn, secretary-treasurer, and C. E. Sweet, John Hanna, Alva Swope, John Stevenson and George E. Holdren were elected as directors of the company.

ADRIAN, MICH.—The Onaway-Alpena Telephone Co. has elected officers for the ensuing year as follows: Mr. Davis, president and general manager; J. S. Gray, vice-president; C. S. Ruthruff, of Jackson, secretary, and Fred H. Orcutt, of Alpena, treasurer. The other members of the board of directors are Will S. Allen and Joseph P. Martin.

CHATFIELD, MINN.—The annual meeting of the stockholders of the Peoples Telephone Co. was held recently. Of 996 shares 706 were represented in person or by proxy. The directors were all re-elected as follows: Hugh Currie, St. Charles; B. W. Huntley, Spring Valley; H. Brown, Dover; E. J. Colby, Stewartville; T. W. Pease, S. Burnap and F. G. Stoudt, Chatfield. At the directors' meeting which followed, all the old officers were re-elected, viz., S. Burnap, president; Hugh Currie, vice-president; T. W. Pease, treasurer; F. G. Stoudt, secretary.

THIEF RIVER FALLS, MINN.—The Holt Telephone Co. held its annual meeting recently and elected M. Grondahl, J. A. Sorum and A. L. Carlson, as a board of directors.

VERNON, MINN.—The annual meeting of the telephone company was held recently. The following were elected officers: T. O. Thorsen, president; O. Benson, vice-president; A. S. Berge, secretary and treasurer; A. I. Snesrud, manager;

WEST CONCORD, MINN.—The annual meeting of the Mutual Telephone Co. was held recently and the following officers elected: Frank Vanderhyde, president; J. J. Cain, vice-president; Geo. L. Wright, secretary-treasurer; directors, T. W. Chapin, A. H. Evarts, Fred Zeller, M. F. Woods, E. H. Engle and Wm. Folsom.

ZUMBROTA, MINN.—At the annual meeting of the Farmers' Mutual Telephone Co., of Goodhue County, held recently, the following were elected officers for the coming year: President, Martin Syverson; vice-president, Haagen Husbyn; secretary, L. J. Gjemse; treasurer, S. O. Swenson. Oscar Loken was elected director for a term of two years. A ten per cent. dividend was declared.

HECTOR, N. Y.—At the annual meeting of the Home Telephone Co. the following officers were elected for the ensuing year: F. D. MacNetton, Hector, president; C. A. Moore, Hector, vice-president; F. D. Johnson, Valois, secretary, and Geo. R. Ayers, Valois, treasurer.

GRESHAM, ORE.—At a stockholders' meeting of the Multnomah & Clackamas County Mutual Telephone Co. two new directors were elected for the next five years. They are E. S. Jenne, of Gresham, and Robert Jonsrud, of Kelso, Ore.

Construction.

SHAWNEE, OKLA.—The Pioneer Telephone & Telegraph Co. has purchased the site of the First Presbyterian Church and will erect a $100,000 office and exchange building, the construction of which is to begin soon. The building will be completed about January 1 and will be a two-story building. It will be used exclusively by the telephone company.

NEW YORK.—The New York Telephone Co. has purchased from the estate of James W. Cain a plot, 70x100, on the east side of Bell avenue, 30 feet south of Lawrence boulevard. The telephone company intends to erect a brick building on the property for a telephone central office.

MORRISTOWN, TENN.—The Home Telephone Co. has purchased a site and is now excavating for the foundation of a two-story brick building. The second floor will be used by the company and the ground floor will be rented for business purposes.

Miscellaneous.

RECTOR, ARK.—The Rector Co-operative Telephone Co., of Piggott, has filed notice of dissolution.